




The State Laboratory  
An tSaotharlann Stáit



Annual Report 2008



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## Contents

<b>Introduction</b>	
Dermot Hayes, State Chemist	3
<b>Strategic Theme 1 - Agriculture and Food</b>	<b>4</b>
Dioxins	4
Scheme to improve Analytical quality in the Agri Industry	6
<b>Strategic Theme 2 - Revenue</b>	<b>7</b>
Counterfeit Spirits	7
European Customs Laboratories Group Workshop	9
<b>Strategic Theme 3 - Coroner Service and Other Departments</b>	<b>10</b>
Unregulated Online Trade in Medicines	11
Case of Bird Poisoning	12
<b>Strategic Theme 4 - Modernization Agenda and Operational Capacities</b>	<b>13</b>
Development of Analytical Capacity	13
Operational Capacity	14
Meetings	17
<b>Appendices</b>	
Appendix I: Progress Report on Customer Charter Objectives	19
Appendix II: List of Accredited Tests	20
Appendix III: List of Personnel	22





## Introduction



This 2008 Annual Report describes the progress made during the year in implementing the objectives of the State Laboratory's Strategy Statement in providing an analytical and advisory service to government Departments and Offices that supports their policies, regulatory programmes and strategic objectives.

The analytical activity during the year covered the analysis of over 13,500 samples, while over 750 requests for advice were answered and 98 new test procedures were developed. Accreditation is a pre-requisite for work in many analytical areas for a modern laboratory. The State Laboratory holds accreditation to EN/ISO 17025 and in 2008 extended the scope to cover 35 test procedures.

Some of the more unusual specimens for analysis included samples from two White-tailed Sea Eagles, recently introduced into the country, that were found dead in the Killarney National Park in early summer 2008. These samples were taken from the dead birds by inspectors in the Department of Agriculture, Fisheries and Food and the Department of the Environment, Heritage and Local Government and were sent to the State Laboratory for investigation. Staff quickly developed a LC-MS/MS procedure to identify the poisoning substance.

During the past few years the Laboratory has set up a facility and developed staff expertise in the analysis of dioxins and dioxin-like PCBs. This is a complex analytical methodology involving the identification and quantification of the different congeners that contribute to the total dioxin toxicity. In December the dioxin in pork incident hit the headlines, and it became clear how important it was to have the analytical capacity in Ireland to respond appropriately and quickly to such an incident. The State Laboratory has now the capability to carry out dioxin testing, which will commence in 2009.

On a poignant note, the untimely death occurred during the year of our colleague Jim Hayes. Jim's long work career spanned the eras when the Laboratory was located in Merrion Street, in Abbotstown and most recently in the Backweston laboratory.

Finally, I would like to acknowledge the hard work and commitment of staff during the year. This has ensured that the State Laboratory provided a quality analytical and advisory service to customers and has developed the capacity to meet their future needs.

**Dermot Hayes**  
State Chemist

**Goal: Meet current and future needs for high quality, timely and expanded analytical and advisory services to ensure the highest standards of food safety and quality, consumer protection and animal & plant health.**

#### Context

The work of the Agriculture and Food Division of the State Laboratory is a critical component in the control of the quality and safety of Irish food and food products. The State Laboratory analyses samples from various stages of the food supply chain to ensure compliance with European and domestic legislation. A wide range of sample types are analysed, including fertilisers, animal feedingstuffs, food-producing animals, plants and finished foods.

Animal feedingstuffs are analysed to determine their nutrient content. Feedingstuffs are also analysed to detect the presence of undesirable or illegal substances, such as growth promoters, antibiotics, mycotoxins and other naturally-occurring toxic substances. Veterinary medicinal products are assayed to ensure that they comply with various legislative parameters and prescriptions.

The Laboratory plays a major role in ensuring that Irish agriculture complies with EU legislation on the residues of veterinary medicines in food. Both fluid and tissue from food-producing animals are analysed, primarily to detect the presence of hormones and other drugs. The Laboratory's work ensures Ireland's compliance with the National Residue Monitoring Plan. The State Laboratory is an EU-appointed National Reference Laboratory for Veterinary Residues.

The economically important potato crop is monitored for Brown Rot and Ring Rot diseases.

#### Dioxins

Dioxins are highly toxic substances which must be excluded from the human and animal food chain. They are created in a number of ways, including through industrial processes and as products of incomplete combustion. High levels of dioxins are also found in certain waste industrial oils. The storage and disposal of these oils present particular problems from an environmental perspective. It is also important to ensure that such oils and similarly contaminated materials are excluded from the human and animal food supply.

The toxic effects of dioxins and related compounds are exacerbated because these toxins accumulate in animal tissues. Consequently human health can be placed at risk through the consumption of contaminated food products of animal origin. Once dioxins enter the body, they are absorbed and stored in fat tissue, where they can endure for years, due to their chemical stability. It has been estimated that after contamination with dioxin, 50% of the original contamination is still present seven to eleven years later. About 90% of human exposure to dioxins is through the food supply, mainly through meat, dairy products, fish and shellfish. In Ireland we are fortunate that the background levels of dioxin are very low and food contamination is an extremely rare occurrence.

Most exposure of animals intended for human consumption is through feed material. The human food supply can be protected by protecting the animal feed supply from contamination. This requires that animal feed used in Ireland is tested for dioxin contamination. It is also important to prevent secondary contamination of the food supply by preventing dioxins entering the supply at any other point in the production chain. Good controls and practices during primary production, processing, distribution and sale are all essential to the production of safe food.



## Strategic Theme 1

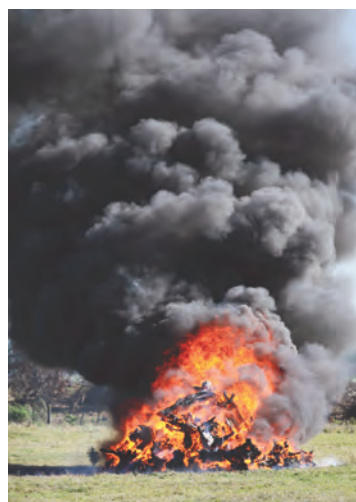
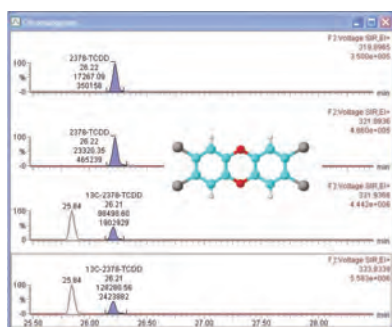
### Agriculture and Food

The recent incident involving the contamination of Irish pork by dioxins was detected as a result of routine monitoring of animal fat samples, carried out by the Department of Agriculture. When the samples were found to contain a high level of 'indicator PCBs', which can imply dioxin contamination, they were sent for further analysis and were found to contain dioxins. An investigation led to the identification of the source of the contamination, which turned out to be feed material. This case highlighted the usefulness of routine monitoring of both feed and food for early detection of contamination by dioxins. It emphasised the value of having the analytical competence in Ireland to ensure the protection of the food supply and of the population.

In recent years, the State Laboratory recognised that dioxin analysis was an important strategic area in which to develop analytical expertise and capacity, in the interest of human health and of the international reputation of the Irish food industry. This followed a consideration of current scientific knowledge in the field, and an awareness of the consequences of a number of serious dioxin-related incidents in other countries. It was clear that it was of strategic importance to have dioxin-

testing facilities and expertise in this country. Because of the potentially devastating economic and health effects of dioxin contamination, it is undesirable both in principle and in practical terms for Ireland to rely on laboratories in other countries to carry out analysis in this area. It was decided that the State Laboratory would develop facilities for dioxin analysis.

The State Laboratory is now able to provide an analytical service for dioxins within Ireland. It has created a national centre of expertise and technical resources in this field which equip it to meet the challenges of any suspected incidents of food or feed contamination by dioxins and related compounds, as well as to conduct ongoing routine analysis for dioxins. This provides a substantial measure of confidence both to the consumer of food and to the food industry that the food supply is appropriately monitored and protected through the application of the most advanced scientific techniques.



## Strategic Theme 1

### Agriculture and Food

#### Scheme to improve Analytical quality in the Agri Industry

The State Laboratory organises a Proficiency Scheme for laboratories engaged in analysis of animal feedingstuffs. By participating in proficiency schemes such as this, laboratories in the animal feed industry have an objective means of assessing and demonstrating the reliability of the analytical data they are producing on a routine basis. Through its involvement in the scheme, the State Laboratory contributes to the improvement in the quality of chemical analysis in the animal feed industry in Ireland.

The proficiency scheme involves the analysis of animal feed samples for five parameters by each of the participating laboratories. These parameters are Crude Protein, Crude Oil & Fat, Crude Fibre, Crude Ash, and Moisture. The State Laboratory Quality Manager compiles and evaluates the results and produces a report for participating laboratories. A copy of the report is provided to the Department of Agriculture.

The scheme, involving laboratories on both sides of the border, has been running since 1997. Fifteen laboratories from Northern Ireland and the Republic now take part in the scheme. In 2008, two rounds of samples for proximate analysis were circulated to participating laboratories by the State Laboratory. A third round of samples was prepared in December 2008.

**Table 1 - Agriculture & Food**

Category of sample	No. of Samples
Animal Feedingstuffs	1610
Fertilisers/Limestones	363
Plant Health	2677
Mycotoxins in Feed and Food	451
Veterinary Residues	1232
<b>Sample Total</b>	<b>6333</b>

Numbers refer to samples. The number of tests on each sample will range from 1 to 7.



**Goal: Meet current and future requirements for high quality and timely analytical and advisory services that support maximum compliance with customs and excise legislation.**

#### Context

The State Laboratory provides essential support to the State's revenue-gathering functions, through the provision of expert scientific advice and of high-quality analytical services. The laboratory provides analysis and expert advice to Revenue in relation to the correct classification for customs purposes of a wide range of traded goods, and in relation to the determination of the appropriate excise duties applicable to hydrocarbon oil products and to alcoholic beverages. The Laboratory also assists Revenue in ensuring compliance with the export refund and import levy systems of the EU Common Agricultural Policy.

The Laboratory's analytical services are necessary to enable Revenue to determine accurately money due to the Exchequer and to detect and eliminate certain fraudulent activities. These include the illegal use of 'rebated oils' (where a reduced excise rate is levied on certain hydrocarbon oils when they are used for particular purposes) and the laundering of marked diesel. Laundered diesel production creates serious environmental pollution, through the illegal disposal of the chemical residues from the laundering process.

#### Counterfeit Spirits

Counterfeit spirits are illegally produced distilled alcoholic drinks which are often sold to consumers as the legitimate product of reputable distilleries and producers. Their production and sale amount to a triple assault on society, by endangering human health, by misrepresenting fraudulent goods to consumers and by depriving the Exchequer of legitimate revenue. The State Laboratory assists both Revenue and the National Consumer Agency in countering the production and distribution of these illegal spirits.

The State Laboratory provides a service to Revenue for the identification of spirits in suspected cases of fraud. Samples are submitted to the Laboratory by Customs & Excise Officers for analysis as part of the preparation of the Book of Evidence for prosecution purposes. The Laboratory's service to the National Consumer Agency is intended to assist them in dealing with consumer complaints relating to issues such as the sale of watered-down spirits or of allegedly fraudulent alcoholic beverages.

Over the past five to six years considerable amounts of counterfeit spirits have been detected on sale in some licensed premises throughout Ireland. In some instances this product was sold in genuine merchants' bottles that had been refilled and recapped using bogus caps. In other cases, the counterfeit product was sold in counterfeit bottles which had been labelled and capped with fake labels and fake caps of well known brands. These bottles and caps can be identified by a trained eye if examined closely, but would not be obvious to patrons in a bar, nightclub or off-license.

It is possible that these illegally produced spirits could be made in unhygienic conditions, lacking any quality or health control checks. In the past year some counterfeit spirit samples received by the State Laboratory were also found to contain higher than permitted levels of methanol. The presence of methanol could present a

## Strategic Theme 2

### Revenue

public health hazard if sufficiently high levels are present in the counterfeit product, particularly if large quantities of the product are consumed.

Additional safety concerns arise in relation to the source of the alcohol used in creating the counterfeit spirit. While a consumer might suppose that the alcohol was produced using a clean and quality-controlled distillation process, alcohol in counterfeit drinks could come from a range of undesirable sources, and might contain harmful substances which would not be encountered in legitimately produced spirits.

From the perspective of revenue collection, the manufacture and sale of counterfeit alcohol is viewed as a serious offence as it results in loss of revenue from Alcohol Products Tax and enables the evasion of all taxes (VAT, Excise, Income Tax) by the suppression of throughput by unscrupulous vintners, off-licences and other outlets. In addition, it damages the legitimate trade by competing unfairly with legally compliant traders.

Revenue has been successful in prosecuting the purveyors of counterfeit spirits in the courts. State Laboratory personnel carry out the analysis as part of the preparation of the Revenue case. Confirmation of the fact that a product is counterfeit is given by State Laboratory personnel in their expert testimony in court. The penalties on conviction for offences related to counterfeit spirits are quite severe. The penalty in the District Court is a fine of €5,000 or, at the discretion of the Court, imprisonment for a term not exceeding 12 months, or both. The penalty in the higher courts, on conviction on an indictment, is a fine of €12,695 or, at the discretion of the Court, imprisonment for a term not exceeding 5 years, or both.

Additionally, where the person convicted of such an offence in the District Court is the licensee, the Court shall, in addition to any penalty imposed, make an order for the temporary closure of the premises concerned or any part thereof for a period of not less than 2 and not more than 7 days for a first such offence.

The National Consumer Agency has also prosecuted cases based upon State Laboratory analytical expertise.

Through its analytical work, the State Laboratory plays a crucial role in securing and maximising the State's revenue by assisting Revenue to curtail and eliminate the sale of counterfeit spirits. The interests of consumers are protected, through the identification of defective and counterfeit spirits on sale in retail outlets. The analytical capacity and expert knowledge of the State Laboratory is a crucial support in countering this illegal trade in counterfeit spirits.



## Strategic Theme 2

### Revenue

#### European Customs Laboratories Group (GCL) Workshop

A major workshop on Routine and Screening Methods of Analysis was held in November 2008. This workshop was organised by the State Laboratory on behalf of the GCL and funded under the EU Customs 2013 Programme. There were 27 participants, including delegates from 20 EU member states.

The overall objective was to examine the establishment of criteria and conditions for the acceptability of results obtained for official customs control purposes, using rapid screening / routine methods of analysis, in addition to the reference methods of analysis laid down in legislation. The long-term purpose is to improve the effectiveness of Customs Laboratories by employing advances in modern technology to optimise sample throughput and to minimise the use of environmentally undesirable reagents, while maintaining an appropriate quality for the analytical results.

**Table 2 - Revenue**

Category of sample	No. of Samples
Customs / CAP	1279
Hydrocarbon Oils	1177
Alcohols	440
<b>Sample Total</b>	<b>2896</b>

Numbers refer to samples. The number of tests on each sample will range from 1 to 7.

## Strategic Theme 3

### Coroner Service and Other Departments

**Goal:** Meet current and future requirements for timely, high quality services in areas such as forensic toxicology, health and safety compliance, environment and heritage protection, and metrology

#### Context

The State Laboratory is a major centre of expertise and analytical capacity for the provision of services in these areas, in many of which the individual citizen's interests are concerned.

The State Laboratory provides a high quality analytical service to coroners and to certain other bodies. The analytical work for coroners provides evidence at inquests of the presence or absence of prescription and illegal drugs and of certain other substances. Because of its expertise and analytical capacity, the State Laboratory also analyses biological samples for drugs in cases of murder, rape and deaths in custody.

In terms of sample throughput, there was a 6% increase in numbers received in the Human Toxicology section over the previous year. The widespread use of cocaine in society continues to be reflected in the high prevalence of post mortem cases dealt with in which the drug and or its metabolites are detected. A number of coroner cases involving the amphetamine type drug, benzylpiperazine (BZP), also known as 'legal ecstasy', were encountered for the first time. The drug is marketed in some outlets in the form of party pills, usually in combination with other piperazine derivatives. Legislation to include BZP and related compounds in the Schedule of Controlled Substances in the Misuse of Drugs Act is due to be passed during 2009.

Certain other biological samples are analysed for the presence of toxic or potentially toxic hazardous substances for other clients. On behalf of the Irish Medicines Board, the Laboratory screens a number of pharmaceutical preparations for the quality and quantity of active ingredient to ensure safety of medical preparations. In addition, the Laboratory provides an analytical service to support the work of architects and conservators in the Office of Public Works and in other national cultural agencies. In its role as a National Metrology Institute for Chemistry, the Laboratory continues to participate in the CCQM and its Working Groups.





## Strategic Theme 3

### Coroner Service and Other Departments

#### Unregulated Online Trade in Medicines

Legitimate supply of medicines is strictly controlled and monitored in Ireland, both by the State's regulatory agencies and through the advice of health professionals to patients.

In recent years a major socio-medical problem has arisen through the purchase of medicines over the Internet. The incidence of this has been increasing. In the case of medicines bought over the internet, national controls are circumvented, with potentially devastating consequences for the health of people who use these substances.

The dangers of buying medicines over the internet are frequently either misunderstood or discounted by purchasers. The dangers and concerns include buying products which contain no active ingredient, or which contain an incorrect concentration of an active ingredient, or which contain the wrong active ingredient, or which are contaminated. A particular issue is the inclusion in a product of an analogue active ingredient, rather than the authentic ingredient, which might not have the intended effects. In all these cases, significant damage can be caused to the health of a person who uses such a product.

There is clearly a need for users of medical products to buy from a reputable source, in accordance with legal regulations and with appropriate medical advice. Through its analytical services, the State Laboratory plays a crucial part in ensuring that the regulatory authorities are in a position to enforce legislation in this area.

The Irish Medicines Board (IMB) plays an active role in helping to protect consumers in relation to the online trade in medicines and medical products, through its extensive activities both nationally and internationally. It safeguards human health, through the regulation of

human and veterinary medicines and medical devices on sale in the Irish market. In cooperation with other agencies both in Ireland and internationally, the Board stems the flow of unauthorised and illegal medical products into and out of the country.

The State Laboratory provides an analytical service to the IMB, whereby samples of seized products are submitted for analysis. The IMB enforcement section initiates cases where breaches of medical product legislation have taken place. Samples seized for enforcement purposes by the IMB are submitted for analysis to the State Laboratory under the provisions of the Medical Products (Amendment) Regulations, 2004. This analytical service helps to support the objectives of the IMB in protecting human health.

In 2008, the active ingredients included Mefenamic Acid, Betahistine, Ramipril, Atenolol, Dosulepin, Ciprofloxacin, Pregnenolone and Dehydroepiandrosterone. A number of analytical techniques were used, including HPLC with photodiode array detection, where the analysis is accredited to the ISO 17025 international quality standard. In certain cases where particularly difficult analytical problems were encountered, other instrumental techniques, such as LC-MS and GC-MS, were employed.

In addition to providing laboratory-based support to the work of the IMB through analysis, analysts from the State Laboratory also acted as expert witnesses in certain cases which the IMB pursued through the courts.

## Strategic Theme 3

### Coroner Service and Other Departments

#### Case of bird poisoning

An incident arose during 2008 where the Laboratory developed and implemented analytical methods in a novel area of analysis, in response to an incident of bird poisoning. The Laboratory provided this rapid analytical service to the Department of Agriculture and to the Department of the Environment in 2008, when two dead White-tailed Sea Eagles were found in the Killarney National Park. The eagles had been released into the wild as part of a major reintroduction programme.

Examination of the bird carcasses did not reveal an obvious cause of death. Because of the cost and importance of the reintroduction programme, it was important that the cause of death of the birds should be established. Samples from the dead birds were sent to the State Laboratory for toxicological analysis.

Because of the urgency of the case, it was necessary for the Laboratory to produce analytical results quickly in an entirely new area of analysis. Laboratory staff rapidly developed an LC-MS/MS method that could analyse for a number of compounds which might have been used to poison the birds.

The compounds monitored for were alpha- and beta-chloralose, nitroxinil, strychnine and paraquat. The samples examined were found to contain high levels of alpha and beta chloralose as well as nitroxinil.

This information was then reported to the Department of Agriculture, to the Department of the Environment and to the manager of the Sea Eagle reintroduction project.

**Table 3 - Coroners/Environment/  
Irish Medicines Board**

Category of sample	No. of Samples
Human Toxicology	3135
Public Health	889
Environment	96
Heritage Protection	87
Irish Medicines Board	66
<b>Sample Total</b>	<b>4273</b>

Numbers refer to samples. The number of tests on each sample will range from 1 to 7.

## Strategic Theme 4

### Modernization Agenda and Operational Capacities

**Goal:** Develop our organisational capacity, human and physical resources to ensure quality service delivery, while implementing public sector modernisation requirements.

#### Development of Analytical Capacity

The Laboratory developed a large number of new methods of analysis in 2008 across its areas of responsibility, in response to changing demands from client Departments, to legislative and regulatory changes and to advances in analytical technology. The following list indicates the extent of this enhancement in analytical capacity in the course of 2008.

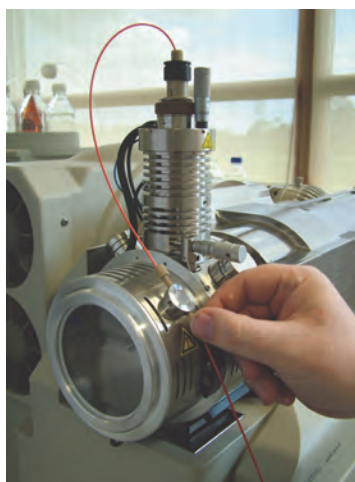


- Method to determine four heavy metals (Arsenic, Cadmium, Lead and Mercury) in Animal Feedingstuffs by ICP MS
- Screening Method for Ochratoxin A in Animal Feedingstuffs
- Method to detect 13 Hormones in Bovine Muscle by LC MS/MS (An LC-MS/MS analytical method was developed and validated that was capable of detecting and confirming the presence of 13 synthetic growth promoting steroids in bovine muscle. This method has been developed especially for testing meat samples received through border inspection posts.)
- Method to detect 7 Nitroimidazoles in Plasma by LC MS/MS
- Method to detect 7 Nitroimidazoles in Eggs by LC MS/MS
- Method to detect 11 NSAIDs in Plasma by LC MS/MS
- Method to detect 11 NSAIDs in Milk by LC MS/MS
- A new method for the determination of alcohol content in alcoholic beverages by NIR (Near Infrared Spectrometry)
- Benzylpiperazine (BZP) and 1 analogue added to the Amphetamines method
- Cocaethylene added to the method for the suite of cocaine analytes
- Prescribed drug screen extended to include 5 new analytes – Triprolidine, Pseudoephedrine, Cocaethylene, Bupivacine and Pyrimethamine

## Strategic Theme 4

### Modernization Agenda and Operational Capacities

- LC MS/MS method developed for Drugs of Abuse in Urine including 6 Opiates, 3 Cocaines, Methadone and Buprenorphine
- New HPLC methods developed for Ranitidine, Clarithromycin and Rifampicin
- HPLC methods developed and validated for identification of Sibutramine, Amlodipine besilate, Tetracycline, Mefenamic acid, Betahistine, Nitrofurantoin, Atorvastatin calcium, Ramipril, Amiodarone, Doxazosin, Isosorbide mononitrate, Atenolol, Amoxicillin, Clotrimazole, Triprolidine, Dosulepin, Teicoplanin, Ciprofloxacin, Pregnenolone and Dehydroepiandrosterone.
- An Ion Chromatographic method was developed for determination of Lithium in tablets.



### Operational Capacity

#### Quality Assurance and INAB Accreditation

To ensure the results of the laboratory are fit for purpose the laboratory operates a quality system. Staff work to the highest professional standard, and are supported by written procedures and monitored against quality criteria. For certain key analytical procedures the laboratory holds formal recognition (accreditation) that the laboratory is competent to carry out these procedures. Accreditation was awarded by the board of INAB (the Irish National Accreditation Board) in July 2003. The scope currently covers 35 of our main test methods.

#### Tests accredited in 2008

In August 2008, accreditation was awarded by INAB for the following additional tests:

- Nicarbazin in Feed by HPLC,
- Trace Elements in Feed by AAS,
- Sulphur in Fuels by WDXRF,
- Nitrogen in Meat by Kjeldahl,
- Confirmatory Analysis of Nitroimidazoles in Serum by LC-MCMS,
- Carbon Monoxide in Blood by Oximetry.
- Flexible scope for Identification and Quantification of Pharmaceutical Compounds

An application for extension of scope of accreditation was submitted to INAB in November 2008 for the following test methods:

- Arsenic in Animal Feedingstuffs by HGAAS.
- Magnesium in Animal Feedingstuffs by FAAS.
- Crude Protein in Animal Feedingstuffs by the DUMAS method.
- Monensin, Salinomycin and Narasin in Feed by HPLC.
- Lead, Cobalt and Cadmium in Feed by GFAAS.
- Hydroxyproline / Collagen Content of Meat and Meat Products.
- Nitroimidazoles in Serum by LC MSMS.



## Strategic Theme 4

### Modernization Agenda and Operational Capacities

- NSAIDS in Plasma and Milk by LC MSMS.
- Flexible scope for Confirmatory Analysis of Veterinary Residues.

A full list of all accredited methods in the laboratory can be found in Appendix II of this report.

#### Information and Communication Technology

The laboratory operates a modern ICT infrastructure. The core system for the laboratory is the Laboratory Information Management System. The main focus of activity this year was increasing the number of instruments directly connected to the system, as well as automating data entry where possible.

New servers were procured in 2008, with a view to virtualizing a substantial proportion of the Laboratory's ICT systems. The new system will also provide a full Disaster Recovery function.

#### Training and Development

Training plays a major role in maintaining and developing the competence of the staff. In 2008 staff availed of courses in a range of analytical techniques.

#### Safety

The Laboratory is committed to maintaining a safe and secure environment for its staff. In 2008 there were no reportable safety incidents.

#### Family Friendly Policies and Equality of Opportunity

The State Laboratory operates the Civil Service Family Friendly policies, including work-sharing, flexitime, parental leave and term time working. Shortfalls arising from staff availing of these measures were met by the recruitment of temporary staff.

The Laboratory is committed to an equal opportunities policy. At the end of 2008 the numbers of men and women in each grade is given in the accompanying table.

Table 5 - Numbers of women and men by grade

Grade	Women	Men
State Chemist	0	1
Principal Chemist	1	1
Senior Chemist Grade I	4	5
Assistant Principal	1	0
Technical Information Mgr	0	1
Chemist Grade II	4	4
Chemist	8	7
Higher Executive Officer	2	0
Senior Laboratory Analyst	9	7
Laboratory Analyst	15	9
Staff Officer	2	1
Clerical Officer	6	0
Storekeeper	0	2
Head Laboratory Attendant	0	1
Laboratory Attendant	1	6
<b>Total</b>	<b>53</b>	<b>45</b>

#### Staffing

There was a 14% turnover of staff in 2008. A Senior Chemist resigned and a Clerical Officer retired during the year. Five Laboratory Analysts were recruited (3 permanent and 2 temporary). Four staff left due to promotion or completion of secondments. Two Clerical Officers and one Higher Executive Officer joined the State Laboratory on secondment from other Government Departments.

In 2008 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). Six students, two from DCU, two from LIT and two from DIT, were placed in areas complementary to their academic discipline for six months.

#### Staff Retirement and Resignation in 2008

Two long-serving members of staff left the laboratory in 2008. Maureen Taylor, who worked in the Corporate

## Strategic Theme 4

### Modernization Agenda and Operational Capacities

Services Section for 16 years, retired from the Laboratory in 2008. Siobhan Stokes resigned as Section Manager in the Human Toxicology Section, to take up a senior post in another scientific institution.

#### Partnership Committee

The Partnership Committee met on seven occasions during 2008. Following on from the Climate Survey conducted in 2007 by the National Centre for Partnership Performance, the Partnership Committee drew up an Action Plan in 2008 to implement the findings.

#### Financial Information

The table below summarises the State Laboratory financial expenditure in 2008, with figures for 2007 provided for comparative purposes.

Table 6		
Gross Expenditure	2007 €,000	2008 €,000
A1. Salaries Wages & Allowances	5,277	5,405
A2. Travel and Subsistence	59	46
A3. Incidental Expenses	294	401
A4. Postal & Telecommunications Services	66	76
A5. Apparatus & Chemical Equipment	2,219	2,287
A6. Office Premises Expenses	1,540,	1,950
A7. Consultancy Services	77	29
<b>Gross Total:</b>	<b>9,532</b>	<b>10,194</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 this year.

##### Financial Auditing

The State Laboratory Audit Committee met once in 2008. Internal audits were conducted on Procurement, Fixed Assets and Inventory. No significant items were noted.

In 2008, the 2007 Appropriation Account was audited by the Comptroller and Auditor General and no incidents were reported.

##### 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 in Appendix I of this report.

##### Freedom of Information

There was no request to the State Laboratory for information under the Freedom of Information Acts.

## Strategic Theme 4

### Modernization Agenda and Operational Capacities

#### Meetings

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. The following table indicates the range of committee work undertaken by State Laboratory personnel.

#### Meetings of EU and other International organizations, attended on behalf of client Departments

- EU Customs Code Committee, Tariff and Statistical Nomenclature Section (Agriculture / Chemical Sector).
- Project Group on the Chemical Chapters of the HS/CN, under the Customs 2013 Programme.
- Project Group on the Food Chapters of the HS/CN, under the Customs 2013 Programme.
- EU Economic and Tariff Questions Group (Duty Suspensions).
- EU Working Group on Textile Names and Labelling.
- EU Dairy Products Chemists Committee.
- World Customs Organisation Scientific Subcommittee.
- General Assembly of the International Organisation of Vine and Wine (OIV).
- Codex Alimentarius Meeting, Budapest.
- Community Reference Laboratory – National Reference Laboratories meeting in October 2008 in Bilthoven, the Netherlands.
- Working group meetings of the CEN Technical Committee on Animal Feedingstuffs (TC327): Working groups on Organic Contaminants, on Composition, on Feed Additives and Drugs and on Heavy Metals, Trace Elements and Minerals.
- ISO Technical Committee meetings on Animal Feedingstuffs (ISO/TC 34/SC 10).
- Workshop held by the Community Reference Laboratory for Dioxins and PCBs in Feed and Food.
- World Mycotoxin Forum Conference.
- Global Conference on GMOs.

#### Group of European Customs Laboratories (GCL)

- Plenary meeting of the “Scientific Customs Steering Group”
- Meeting concerning the ‘Meursing Table’ Proficiency Test. (This is a proficiency test for processed products for ingredients eligible for Export Refunds.)
- Working group on Biofuels.
- Workshop on the identification of denatured ethyl alcohols and counterfeit spirits.
- German Customs Chemists Conference.

#### ENGL: a European Network of Government Laboratories

- Meetings of GoToLab (Tobacco and Tobacco Products)
- European Network of GMO Laboratories Steering Committee Meetings
- European Network of GMO Laboratories Method Validation Working Group

## Strategic Theme 4

### Modernization Agenda and Operational Capacities

#### Other Committees

- Early Warning Committee for New and Synthetic Drugs in the NACD (National Advisory Committee on Drugs).
- Steering Committee for the National Drugs Related Death Index.
- Irish Inter-Agency meeting on GMOs.
- Working Group on Uncertainty of Measurement organized by the Group of Customs Laboratories, Genoa.
- Consultative Committee on Quantity of Material (CCQM) at the BIPM, Paris.
- The International Society of Forensic Toxicology (TIAFT) and the International Council on Alcohol, Drugs and Traffic Safety (IACDTS) Joint Meeting.
- Society of Forensic Toxicology (SOFT) Annual Meeting, Phoenix, Arizona.
- UK and Ireland Forensic Toxicologist Network meetings, Belfast and Malvern.
- National Drug-related Death Index Steering Group meetings.
- National Advisory Committee on Drugs Early Warning Committee meetings.

#### Meetings, Lectures, Workshops

- State Laboratory personnel organise education and training events, in furtherance of informal cooperation with other scientific institutions within the Civil Service. In 2008 the annual meeting of the Chemistry Network was held at the State Laboratory in September. This Network is coordinated by the Quality Manager of the State Laboratory.
- Two posters were presented by State Laboratory staff at the Euroresidue VI Conference, which took place in Egmond aan Zee in the Netherlands in May 2008.
- Three members of staff are on the Committee of the Irish Mass Spectrometry Society and helped organize the 2008 Annual Meeting of Society.

#### Publication by staff members

- G. Dowling\*, P. Gallo, S. Fabbrocino, L. Serpe, L. Regan\*, 'Determination of ibuprofen, ketoprofen, diclofenac and phenylbutazone in bovine milk by gas chromatography-tandem mass spectrometry' in *Food Additives and Contaminants* (2008), Vol 25, pp1497 – 1508.

\* State Laboratory staff



## Appendix 1

### 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 rating with the service provide by the State Laboratory ranged from 100% very satisfied or fairly satisfied with the quality, helpfulness and flexibility of the service, 99% very satisfied or fairly satisfied with the advice provided, 87% very satisfied or fairly satisfied with the range of service provided and 61% 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 35 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 detailed under each of the Strategic Themes in the Development of Analytical Capacity sections of the 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.*

## Appendix II

### INAB Accredited Tests

(Summary of Schedule of Accreditation, edition 11 of 18/08/2008)\*

Matrix	Measurand	Test Method
Animal Feedstuffs	Crude Protein	Method based on Commission Directive 93/28/EEC
Animal Feedstuffs	Crude Oils and Fats	Commission Directive 98/64/EC.
Animal Feedstuffs	Crude Oils and Fats	NIR Spectroscopy
Animal Feedstuffs	Crude Ash	In house method based on Commission Directive 71/250/EEC
Animal Feedstuffs	Crude Ash	Gravimetric method using a Microwave Furnace
Animal Feedstuffs	Crude Fibre	Commission Directive 92/89/EEC.
Animal Feedstuffs	Crude Fibre	NIR Spectroscopy Screening Method
Animal Feedstuffs	Moisture	Commission Directive 71/393/EEC.
Animal Feedstuffs	Moisture (Screening)	Commission Directive 71/393/EEC.
Animal Feedstuffs	Nicarbazin	In House HPLC method with DAD, based on CANFAS-STM-4-CT94-2216
Animal Feedstuffs	Trace Elements: Copper, Manganese & Zinc	Commission Directive 78/633/EEC (Atomic Absorption Spectroscopy)
Animal Feedstuffs	Trace Elements: Copper, Manganese & Zinc	In House method based on Commission Directive 78/633/EEC using Microwave Pressure Digestion (Atomic Absorption Spectroscopy)
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.
Feed and Cereals	Ochratoxin A	In house method using IA column cleanup and RP HPLC with fluorescence detection.
Animal feed: raw materials and processed products	Qualitative screening for genetically modified materials using 35S promoter and NOS terminator	In house method based on EN ISO 21569. Sample preparation, DNA extraction and PCR detection.
Animal feed raw	Qualitative identification of maize BT-176, BT-11 and MON 810 events by PCR	In house method based on EN ISO 21569. Sample preparation, DNA extraction and PCR 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 Range)	In house method using HPLC –DAD.

## Appendix II

### INAB Accredited Tests

(Summary of Schedule of Accreditation, edition 11 of 18/08/2008)\*

Matrix	Measurand	Test Method
Petrol and Diesel Fuels	Sulphur	ISO 20884:2004 Wavelength Dispersive X-Ray Fluorescence Spectroscopy
Petrol and Diesel Fuels	Sulphur	In House Method based on 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
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
Animal Plasma and Milk	Confirmatory Analysis of Non Steroidal Anti Inflammatory Drugs	In house method using solid phase extraction, derivatisation and detection by EI-GC-MS/MS.
Animal Urine	Confirmatory Analysis of Hormones	In house method using solid phase extraction, detection by LC-MS/MS.
Animal Kidney Fat	Confirmatory Analysis of Gestagens	In house method using solid phase extraction, detection by LC-MS/MS.
Animal Serum	Confirmatory Analysis of Nitroimidazoles	In house method using solid phase extraction, derivatisation and detection by LC-MS/MS.

\* For further details, see our schedule of accreditation (Reg. 146T) on the INAB website ([www.inab.ie](http://www.inab.ie)).

## Appendix III

### List of Personnel on 31st December 2008

Principal Chemist Ita Kinahan	State Chemist Dermot Hayes	Principal Chemist Michael Nangle
<b>Veterinary Toxicology</b> John McBride - SC Edward Malone - CII Michael Doyle - C Dr Pierrick Fevrier - C Myra Keogh - C Dr Mark McDonald - C Tom Harbison - SLAN Sheila Martin - LAN Simon Chiu - LA	<b>Corporate Services</b> Marion Kiernan - AP Betty Mitchell - HEO Nuala Talty - HEO Phyllis Barry - SO John Clancy - SO Grainne Harnan - SO Geraldine Gaffney - CO Anne O'Dwyer - CO Alice Baxter - CO Elizabeth Ellard - CO Rachel Kelly - CO Ciara McDaid - CO Mary Greene - LA	<b>Customs and Excise</b> Dr Siobhán Ni Ghriofa - SC Dr Seán McGowan - CII Eddie McGrath - C John Reilly - C Dr David Savage - C Claire Timbs - C Bernard Hanratty - SLAN Neil Lucey - SLAN Noreen Monahan - SLAN David Canny - LAN Laura Flynn - LAN Madeleine Gibbons - LAN Anita Heffernan - LAN Ray Kelly - LAN Denis Ryan - LAN Ciarán Brown, Storekeeper Damien Duffy, Storekeeper Brendan Doyle - LA
<b>Agriculture - Inorganic</b> Dr Kevin Doyle - SC Justin Harmon - LAN Keith O'Sullivan - LAN Chris Taaffe - LA	<b>Accountant</b> Joe Hanahoe	<b>ICT</b> Michael O'Donnell - SC Dr Michael O'Gorman - TIMII Brian McDonald - SLAN
<b>Contaminants and Plant Health</b> Patricia Bonner - SC Mark Sutton - CII Ruth Reilly - C Aengus O Briain - SLAN Mairead Rowsome - SLAN Judith Boyle - LAN (Contract) Sinead Foran - LAN Ciara McDonnell - LAN Tom Gaule - LA	<b>Career Breaks</b> Dr Mandy O'Keeffe - C Bernie Scully - LAN	<b>Human Toxicology</b> Dr Liam Regan - SC Dr Yvonne Kavanagh - CII Frances Mahon - CII Joseph Fitzsimons - C Úna Mc Ardle - C Geraldine Dowling - SLAN Marian Lyons - SLAN Mary Murphy - SLAN Ann Marie Bragason - LAN Patricia Carter - LAN Carol Gleeson - LAN Alan Murphy - LAN Colm Reid - LAN Declan Powell - LA
<b>Quality Assurance Unit</b> Dr Gráinne Carroll - SC		<b>Environment and Health</b> Dr William King - SC Joe Foley - CII Eileen McCarron - CII Joanne Ryder - CII Niamh Fitzgerald - C Dr Julie Tierney - C Phil Dawson - SLAN Seán King - SLAN Keith Pearson - SLAN Sinead Bermingham - LAN Olivia O'Connor - LAN Syl O'Neill - LA
<b>Animal Feedingstuffs</b> Dr Paula Shearan - SC Sharon Cosgrave - C Dr John Fields - C Audrey Nugent - C Sheevaun Cody - SLAN Angela Cunningham - SLAN Fiona Noonan - SLAN Simon Daly - LAN Marella Gallagher - LAN Dennis Sheehan - LAN Johanna Skelton - LAN Fiona White - LAN (Contract) Paul Hirtes - HLA	<b>Abbreviations</b> AP: Assistant Principal Officer C: Chemist CII: Chemist II CO: Clerical Officer HEO: Higher Executive Officer HLA: Head Laboratory Attendant LA: Laboratory Attendant LAN: Laboratory Analyst SC: Senior Chemist SLAN: Senior Laboratory Analyst SO: Staff Officer TIMII: Technical Information Manager II	