



The State Laboratory  
An tSaotharlann Stáit

**ANNUAL REPORT  
2013**





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I am happy to present this Annual Report which documents the State Laboratory's achievements for 2013, a year in which the Laboratory continued to deliver on its commitments to its clients as set out in its current Strategy Statement. It proved to be a particularly demanding and busy year for the Laboratory and one in which there was a greater demand than usual for non-routine analyses.

The year began with the advent of the horse meat scandal in January. The State Laboratory, as the designated National Reference Laboratory for Non-Steroidal Anti-Inflammatory Drugs in food of animal origin, played a key role in ensuring that horse meat contaminated with phenylbutazone (commonly known as "Bute") did not enter the food chain. The laboratory provided a confirmatory analysis service to the Department of Agriculture, Food and the Marine for its equine positive release programme and this programme required results to be reported within a very short turn around time for suspect positive samples. Thanks to the commitment of the staff involved this was achieved throughout the year.

To assist the Office of the Revenue Commissioners in the fight against fuel fraud and fuel laundering, staff of the Laboratory were responsible for testing and evaluating a wide range of potential new fuel markers as part of a Revenue and HMRC joint initiative to introduce a more robust and less easily removed fuel marker on both sides of the border. This project, which involved a lot of non-routine analysis, was successfully concluded during 2013 and the new marker will be rolled out by Revenue in early 2015.

In the Coroners' area, a new regime was introduced whereby all Coroners' samples are now submitted directly to the State Laboratory for both screening and confirmatory analysis. The previous system had led to unacceptable delays for some results to be available due to the number of laboratories involved in the analysis chain. This caused considerable distress for families when Coroners' inquests were delayed. The new arrangement will result in a much improved and timelier service overall for all Coroners.

Full details of these initiatives and other examples of where the Laboratory has responded to the needs of its clients are to be found in the body of this Report. The Laboratory continued to improve its productivity and expand the services it provides by developing new methods of analysis and automating and streamlining its testing protocols. The number of analytes tested for increased by 49% compared to 2012 and 139 new tests were developed and introduced for routine testing. The Laboratory also successfully underwent a full reassessment visit by the Irish National Accreditation Board and at the end of 2013 it was accredited for 49 test methods covering 343 individual analytes.

I would like to acknowledge the skills and dedication of the staff of the Laboratory, whose ongoing commitment to improving the service provided has made these outputs possible. I would also like to thank them sincerely for their commitment and hard work throughout the year which ensured that our clients continued to be provided with a high quality, comprehensive and timely service.

A handwritten signature in black ink that reads "Ita Kinahan".

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**Ita Kinahan,**  
**State Chemist**

## OVERVIEW

The State Laboratory is a scheduled office under the aegis of the Department of Public Expenditure and Reform and its high level objective is to provide a comprehensive analytical and advisory service to Government Departments and Offices, which supports their policies, regulatory programmes and strategic objectives.

The State Chemist has enforcement and referee status under various acts of the Oireachtas and their implementing regulations and Laboratory staff represent Ireland as national experts in analytical chemistry at European Union (EU) and other international meetings.

The State Laboratory undertakes analyses for a number of different clients in the areas of agriculture and food, revenue collection, environmental and public health protection and provides a toxicology service to assist Coroners. Chemical analysis is used to monitor the quality and safety of Irish food and for litigation purposes in prosecuting fraud e.g. illegal use or laundering of marked diesel, sale of counterfeit spirits or possession of illegal medicines. Analyses for the presence of alcohol and drugs assist the Coroners to determine the cause of deaths, e.g. in cases of alcohol / drug overdoses.

Analytical chemistry is a continually evolving area and staff of the Laboratory keep abreast of technological changes and take advantage of the opportunities offered by new technology to improve the quality and efficiency of the service provided to our clients. New instrumentation and extraction techniques enable lower levels of undesirable substances, such as environmental contaminants or drugs, to be detected.

EU and Irish legislation is regularly updated to reflect technological developments and the Laboratory must continually update and improve its methods of analysis. Developing new multi-analyte analytical methods, automating laboratory processes and harnessing the power of IT to reduce transcription of data have been among the key strategies successfully employed by the Laboratory in recent years to maintain and improve services at a time of reducing budgets and decreased staffing levels. In 2013, new methods of analysis were developed and existing methods extended that resulted in a total of 139 new tests using a variety of analytical techniques.

In addition to providing an analytical service, staff from the Laboratory also provide expert advice to clients and represent Ireland on various European Union scientific committees and working groups on behalf of client Departments and Offices. Laboratory staff actively participate in international standardization bodies such as Codex Alimentarius, the European Committee for Standardisation (CEN) and the Consultative Committee on the Amount of Substance (CCQM).

## Main areas of activity

The State Laboratory's main clients include the Department of Agriculture, Food and the Marine (D/AFM); the Office of the Revenue Commissioners; the Coroners; the Department of the Environment, Community & Local Government (D/ECLG); and the Irish Medicines Board (IMB).

The main areas of activity supported by the work of the Laboratory are:

- ◆ Agriculture and food with an emphasis on food safety and quality;
- ◆ Compliance with customs and excise legislation;
- ◆ Forensic toxicology;
- ◆ Environment and heritage protection; and
- ◆ Controlling the use of unlicensed medicines.

In 2013, a total of 12,263 samples were analysed and a total of 383,863 analytes were tested for, an increase of 49% on the total analytes tested for in 2012.

## Agriculture and Food

As Ireland is a major food exporter, monitoring and controlling aspects of food and animal feed safety is a high priority. The State Laboratory assists D/AFM in ensuring the quality and safety of Irish food and food products by monitoring compliance with European and national legislation governing the production, distribution and sale of animal feedstuffs and by testing a wide range of foods for veterinary residues and other contaminants.

## Customs and Excise

The State Laboratory advises the Office of the Revenue Commissioners on the classification of goods and on the application of appropriate excise duties on hydrocarbon oil products and alcoholic beverages and provides an analytical and advisory service in relation to mineral oils, alcoholic beverages and non-potable alcohol-containing products.

## Coroners' Service and Public Health / Environmental Protection

The State Laboratory provides a forensic toxicology service to assist Coroners to investigate the causes of sudden death and to An Garda Síochána to assist with criminal investigations.

The State Laboratory assists D/ECLG to monitor the quality of auto-fuels, the IMB to control the use of unlicensed medicines and the Office of Public Works and other bodies responsible for heritage conservation.

## Accreditation

National and international acceptance of results of analysis requires laboratories to have third party peer accreditation of its methods of analysis, particularly in the areas of official control of food and animal feed and where analytical results are used in court proceedings. The State Laboratory operates in accordance with a documented quality system and is currently accredited by the Irish National Accreditation Board (INAB) for 49 test methods covering 343 analytes.

## National Reference Laboratory Responsibilities

The State Laboratory is a National Reference Laboratory in the following areas:

- ◆ residues of veterinary medicinal products (steroids, corticosteroids, non-steroidal anti-inflammatories (NSAIDs), nitroimidazoles and sedatives) in food of animal origin;
- ◆ additives for use in animal nutrition;
- ◆ dioxins and polychlorinated biphenyls (PCBs) in food and animal feed;
- ◆ mycotoxins in animal feed and food of animal origin; and
- ◆ heavy metals in animal feed.

State Laboratory staff collaborate with the relevant European Union Reference Laboratories (EURLs) on analytical test methods, oversee the performance of screening methods in official laboratories in their areas of competence, and where necessary provide technical assistance and technical advice to the official laboratories and the Competent Authority.

# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 1: Agriculture and Food





# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 1: Agriculture and Food

### Sub-Goal 1: Agriculture and Food

Assist the Department of Agriculture, Food and the Marine to implement multi-annual control plans as required under EU and national legislation to ensure the quality and safety of Irish food, to protect consumers and to control the spread of plant diseases. Fulfil the Laboratory's role as an EU National Reference Laboratory for Veterinary Residues and Feed Additives.

### Animal Feedingstuffs

Animal feed is one of the most important components of the production chain of food of animal origin. In economic terms, animal feed accounts for up to 70% of the total costs of animal production and has an impact on animal health and productivity as well as on food safety and quality. The aim of animal feed controls is to ensure that feedingstuffs are of good quality and do not constitute a hazard to human or animal health. The controls are implemented through risk based inspections and sampling of feedingstuffs at all stages of the feed chain.

The State Laboratory is the principal laboratory responsible for feedingstuffs analysis in Ireland. Samples of feed materials, feed additives, mineral mixtures and compound feeds are routinely tested to ensure that they contain the declared nutrients (protein, fat, starch and minerals), micro-nutrients (trace elements, vitamins), fibre and moisture contents and do not contain elevated levels of toxic components (dioxins, mycotoxins, heavy metals).

### Medicated Feed

Prescribed antibiotics can be given to livestock in the form of medicated feed and the correct dosage rate is important to prevent a build up of antibiotic resistance. Feed samples are tested for authorised veterinary medicines and coccidiostats (feed additives used to prevent coccidiosis, a

major disease in poultry and other farm animals) to ensure that the correct therapeutic levels are present.

The State Laboratory also carries out testing in support of homogeneity studies undertaken by D/AFM to monitor the distribution of antibiotics (sulphadiazine and chlortetracycline) in batches of medicated feed produced by licensed feed mills.

During the production of feed containing coccidiostats, unavoidable carry-over of these compounds can occur from target feed to non-target feed when the same production lines are used, potentially causing harm to the non-target species. The State Laboratory has a liquid chromatography-mass spectrometry (LC/MS) method in place capable of detecting carryover levels of 11 coccidiostats in rations destined for non-target species.

The Laboratory also tests for banned antibiotics which are no longer allowed in livestock production in Europe using a LC/MS method of analysis that is capable of detecting 12 of these banned substances.

### Priority Feed Samples

In May 2013 there was a Rapid Alert notified by Germany, due to a high level of lead being found in one of a number of samples tested in a shipment of palm kernel expeller from Malaysia. A part of this shipment subsequently arrived at Ringaskiddy for import into Ireland and it was detained by D/AFM personnel pending testing in the State Laboratory. This occurred during the fodder crisis and the compound feed industry sought to have the material released as quickly as possible. Eight samples were delivered to the Laboratory by courier and results were available for the heavy metals, arsenic, cadmium and lead within 24 hours. No elevated levels were found and D/AFM released the shipment with minimal delay.

During the summer of 2013, there were a number of instances of priority samples being submitted for analysis in connection with farm animal deaths. In June seven samples were submitted for heavy metal, macro and trace element analysis, including selenium, in connection with pig deaths in Cork. Eight samples were subjected to the same suite of analyses plus dioxins and mycotoxins in support of an investigation into a case of sudden cattle deaths in Waterford where 14 of a group of 35



# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 1: Agriculture and Food

fattening bulls died over a 3-day period. In another case two feed samples were tested in support of an investigation into a case of sudden cattle deaths on a farm in Wicklow.

### Fertilisers and Liming Materials

The State Laboratory is Ireland's approved laboratory for checking that fertilisers placed on the market comply with EU legislation. Fertilisers and liming material play an essential role in supporting plant growth and animal production. Fertilisers supply the nutrients required to produce forage and crops, and liming materials ensure that soil pH is optimised to support plant growth.

Fertilisers are routinely monitored for the following nutrients: nitrogen, phosphorous, potassium, and sulphur. During 2013 a new method of analysis was developed to determine the minerals calcium, magnesium and sodium in fertilisers. Liming materials are monitored for particle size, total neutralising value and moisture content. This testing is particularly important when new limestone quarries are opened.

### Food Safety

To ensure that food produced in Ireland is of the highest standard, the Food Safety Authority (FSAI) and D/AFM work together to implement comprehensive multi-annual control plans to monitor the production of food at all stages of the food chain and ensure compliance with national and international standards of food safety. The State Laboratory has developed a high level of expertise in the chemical analysis of veterinary drug residues and other contaminants such as dioxins and mycotoxins in food.

### Veterinary Drug Residues

The presence of unauthorised substances, residues of veterinary medicinal products or chemical contaminants in food may pose a risk to public health. Under EU legislation (Council Directive 96/23/EC), D/AFM administers a National Residues Monitoring Plan which is designed to safeguard consumers from harmful residues in food of animal origin. Animal categories and food products covered include bovines, pigs, sheep and goats, horses, poultry, milk, eggs and honey.

The number of samples tested for veterinary drug residues in the Laboratory has increased significantly in recent years, with a further 13% increase in sample numbers during 2013. Most of this increase was as a result of a new LC/MS/MS method being developed to test for chloramphenicol in serum and egg samples and an increase in testing for phenylbutazone and other non-steroidal anti-inflammatory drugs (NSAIDs) in kidney samples, especially from equines.

### Phenylbutazone ("Bute") Testing

Following the horse meat scandal in early 2013, when foods advertised as containing beef were found to contain undeclared horse meat, there were concerns that sport horses which had been treated with the veterinary drug phenylbutazone, which is banned in food animals, could enter the food chain.

On 27<sup>th</sup> of February, D/AFM introduced a positive release programme for horses presented for slaughter and plasma samples were sent to the Irish Equine Centre for screening analysis, prior to the carcasses being released into the food chain. All suspect positive samples were sent to the State Laboratory for confirmatory analysis, which had to be completed within a few days of receipt due to the short shelf life of horse meat. A total of 1724 samples were taken under this programme of which 35 screened positive and were submitted to the State Laboratory. Of these, only one sample submitted in March 2013, was confirmed positive.

Overall the number of horses presented for slaughter was very significantly down on the numbers presented in 2012, probably due to the increased controls in place.

### Chemical Contaminants

The State Laboratory is the National Reference Laboratory for dioxin analysis in Ireland. Dioxins are highly toxic environmental contaminants which must be excluded from the human and animal food chain as approximately 90% of human exposure to dioxins results from the consumption of contaminated food such as dairy produce, meat and fish.

In addition to testing a wide range of feedingstuffs (including recycled foods used for animal feeding), the State Laboratory also tests foods such as milk and vegetable oils used in the dairy industry and in the manufacture of infant formula. Animal fats for a range of species are also sampled and tested under the National Residue Monitoring Plan.

During 2013, the Laboratory discontinued using a bioassay method to screen for dioxins in food and feed and from mid-year all samples have been analysed by high resolution gas chromatography mass spectrometry. This means that all food samples tested have full congener profiles and meet the requirements of the FSAI for any surveys they undertake to monitor dioxin levels in food.

A testing service is also provided to the Environmental Protection Agency for its annual survey of background levels of dioxins in milk.

Mycotoxins are substances naturally produced by moulds and fungi that can enter the food chain via contaminated animal feedingstuffs. During 2013, the Laboratory developed and validated a new multi-analyte LC/MS/

# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 1: Agriculture and Food

MS method capable of detecting 16 mycotoxins in feed (12 quantitatively, 4 qualitatively). This method will be introduced for routine testing of all feed samples in 2014.

Under the National Residue Monitoring Plan, samples of milk and liver are tested for aflatoxin M1 and ochratoxin A respectively.

There is also concern at EU level regarding the possible health risks associated with high dietary intakes of nitrates and since leafy vegetables are the main source of dietary nitrate, maximum levels have been established for nitrate content in lettuce and spinach and samples taken by the D/AFM are analysed by the State Laboratory on a regular basis.

### Veterinary Toxicology Service

Golden eagles, white-tailed sea eagles and red kites are protected species under law and there has been significant investment in the programme to re-introduce these species to Ireland. The State Laboratory provides a toxicant testing service to the D/AFM and the National Parks and Wildlife Service (NPWS) to assist investigations into suspected poisonings of these birds of prey and other highly vulnerable species (buzzards, kestrels and owls) and to investigate cases of suspected farm or companion animal poisonings.

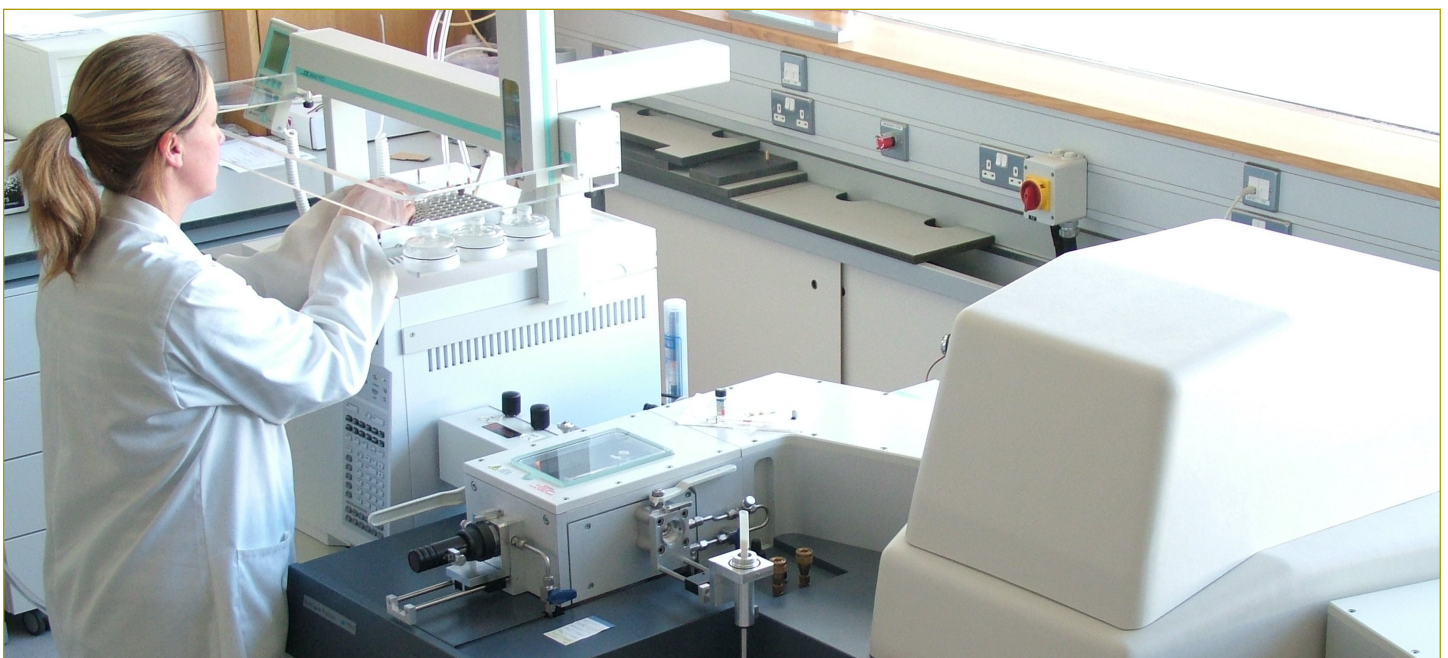
During 2013, biological samples from various dead birds were submitted for testing. Many of these were found to contain toxicants such as alpha-chloralose, carbofuran and second generation anti-coagulant

rodenticides such as brodifacoum, bromadiolone and flocoumafen. Unintentional secondary poisoning of birds can occur when they ingest poisoned rats and mice and this has been found to be a particular problem for red kites, owls and buzzards.

In September 2013, the Irish Campaign for Responsible Rodenticide Use (CRRU) was launched with the aims of increasing awareness of the threat to wildlife associated with poor rodenticide use and promoting best practice rodent control. It is supported by all the main manufacturers of second generation anticoagulant rodenticides that are in use in Ireland.

At present the method of analysis used by the State Laboratory is capable of detecting 12 of the most commonly used toxicants for routine screening of post-mortem samples. Future work is planned to develop quantitative methods of analysis that will determine the levels of toxicants present. This will provide more certainty as to whether the toxicants detected were sufficient to have caused death or whether there may have been sub-lethal effects.

A variety of other biological samples were submitted in connection with the deaths of cattle that had been fed suspect haylage and dicoumarol (a naturally occurring anti-coagulant of combined plant and fungal origin) was confirmed present. In a separate case, also relating to bovine deaths, a quantitative method was developed to measure levels of caffeine in bovine serum and many of the samples tested were found to contain excessively high levels of caffeine.



# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 1: Agriculture and Food

<b>NUMBERS OF SAMPLES TESTED</b>		
<b>Agriculture and Food</b>		
<b>Category of Sample</b>	<b>No. of Samples</b>	<b>No. of Analytes Tested For</b>
Animal Feedingstuffs	1,014	8,056
Fertilisers / Liming Materials	138	432
Veterinary Residues in Food	1,553	11,121
Dioxins in Feed and Food	293	7,844
Mycotoxins in Feed and Food	410	719
Heavy Metals in Vegetables	300	899
Nitrates in Vegetables	68	68
Toxicants in post mortem samples	163	1,956
Veterinary Medicinal Products	111	112
<b>Totals</b>	<b>4,050</b>	<b>31,207</b>

<b>NEW METHODS DEVELOPED</b>		
<b>Agriculture and Food</b>		
<b>Test Method</b>	<b>Analytical Technique</b>	<b>No. of Analytes</b>
Minerals (Ca, Mg, Na) in fertilisers	ICP/OES	3
Mycotoxins (12 quantitative, 4 qualitative) in feed	LC/MS/MS	16
Zearalanone, trenbolone and stilbenes in liver	LC/MS/MS	6
Oxyphenbutazone and flufenamic acid in plasma	LC/MS/MS	2
Oxyphenbutazone and flufenamic acid in kidney	LC/MS/MS	2
Chloramphenicol in serum	LC/MS/MS	1
Chloramphenicol in eggs	LC/MS/MS	1
Bromadiolone in post-mortem samples	LC/MS/MS	1
Caffeine (quantitative) in bovine serum	LC/MS/MS	1
Veterinary drugs in veterinary products	HPLC/PDA	4
<b>Total</b>		<b>37</b>

# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 2: Customs and Excise

### Sub-Goal 2: Customs and Excise

Advise the Office of the Revenue Commissioners on the correct classification of goods under the Customs and Excise Tariff of Ireland and on the application of appropriate excise duties on hydrocarbon oil products and alcoholic beverages. Assist Revenue with controlling compliance with the Export Refund and Import Levy systems of the Common Agricultural Policy.

### Customs Samples

The level of testing in the Customs area continued to decrease in 2013. Most of the work now relates to tariff classification of a wide range of traded goods such as chemicals, foods, medicaments and plastics. All goods imported into or exported from the EU must be classified for Customs purposes and each separate product is assigned a particular classification code. State Laboratory staff have developed a high level of

expertise in this area which enables them to advise Revenue on chemical aspects of tariff classification. An important aspect of the work is attendance at meetings of Technical Committees of both the European Union and the World Customs Organisation where issues relating to the interpretation of tariff headings are discussed and decisions made on the classification of products.



# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 2: Customs and Excise

### Excise Samples

The State Laboratory provides an analytical and advisory service to Revenue in relation to mineral oils, alcoholic beverages and non-potable alcohol-containing products to assist them in determining the appropriate duties applicable and in prosecuting fraud where attempts are made to evade such duties. During 2013, the Laboratory played a major role in the testing and evaluation of potential new mineral oil markers.

### Mineral Oil Testing

Rebated (lower-taxed) fuel for off-road use (agriculture/home heating) is marked with dyes or chemical markers so that its use for any other purpose or illegal sale can be identified. A major illicit activity in relation to mineral oil is the laundering of marked fuel to remove these markers. This has been a persistent problem for many years but it became more acute in 2011 when environmental regulations meant that the limit for the sulphur content in some marked fuel became the same as that for road diesel. This made fuel laundering more difficult to detect and laundering and distribution activities increased dramatically.

Fuel laundering poses a serious threat to the Exchequer, to legitimate trade and, because of the processes used in laundering, to the environment. During 2013, Revenue's comprehensive strategy to tackle the problem included robust enforcement action which resulted in 9 oil laundries being detected and dismantled and 30 filling stations being closed down. The State Laboratory supports this work by analysing samples of the fuel seized from road vehicles and laundries for the presence/absence of prescribed oil markers and providing analytical evidence and expert advice to facilitate the prosecution of those involved in this fraudulent activity.

### New Fuel Marker Project

The fuel laundering problem in Ireland involves the laundering of marked fuel sourced on both sides of the border. In February 2014, Revenue, in partnership with Her Majesty's Revenue & Customs (HMRC) in the UK, announced a new all island marker which is highly resistant to laundering. This new marker, which will assist law enforcement agencies on both sides of the border to combat fuel fraud, was identified following a rigorous, joint UK/Ireland evaluation process in which the State Laboratory played a central role during 2013.

Following an Invitation to Make Submissions (IMS) issued by Revenue and HMRC in June 2012, 12 applications were received and 25 potential new markers were proposed. Evaluation of resistance to removal (i.e. launderability testing) was a critical element of the assessment of the



proposed new markers. The State Laboratory was responsible for subjecting mineral oils marked with the potential markers to a variety of different laundering techniques, 11 in all. New method of analysis also had to be set up to evaluate the results of the launderability testing for each marker.

This project required a high level of expertise and non-routine laboratory analysis. The project also had to be carried out in parallel with routine testing.

In November 2013, the evaluation process was completed and the IMS Project Board made recommendations to the Board of the Revenue



# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 2: Customs and Excise

Commissioners. A new mineral oil marker will be implemented by Revenue and HMRC in consultation with the industry early in 2015.

### Alcohol Testing

For excise purposes, alcoholic beverages are classified as beers, wines, ciders or spirits and duty is based on the alcohol content. Counterfeit spirits are illegally produced alcoholic drinks which are often sold to consumers as legitimate product.

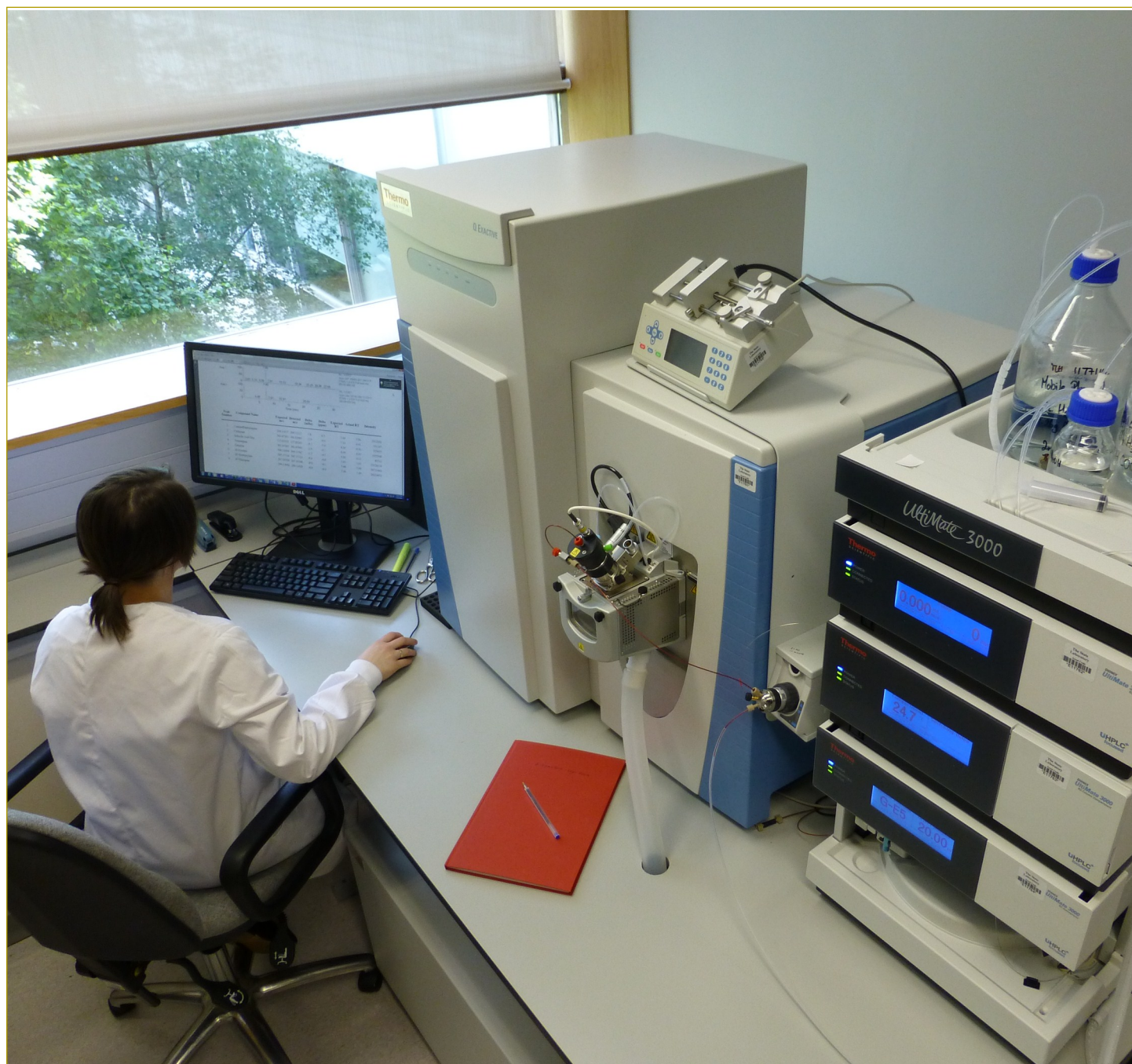
The State Laboratory assists the Office of the Revenue Commissioners to monitor compliance and to combat excise duty fraud and the production and distribution of counterfeit spirits. Most samples are tested for alcohol content and, where required, congener profiling and testing for authenticity indicators is carried out. A small number of samples containing non-potable alcohol are tested for denaturants.



NUMBERS OF SAMPLES TESTED		
Customs & Excise		
Category of Sample	No. of Samples	No. of Analytes Tested For
Customs	357	374
Excise - Mineral Oils	1,786	10,231
Excise - Alcohols	218	442
<b>Totals</b>	<b>2,361</b>	<b>11,047</b>

# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 3: Coroners' Service & Public Health / Environmental Protection





# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 3: Coroners' Service & Public Health / Environmental Protection

### Sub-Goal 3: Coroners' Service & Public Health / Environmental Protection

Provide a toxicology service to assist Coroners' investigations into the causes of sudden death and to An Garda Síochána to assist with criminal investigations. Assist the Irish Medicines Board to control the use of prescription drugs and monitor the quality of auto-fuels for the Department of the Environment, Community and Local Government.

#### Human Toxicology Service

The State Laboratory assists Coroners and the State Pathologist by analysing post mortem samples to confirm the presence or absence of ethanol, legal and illegal drugs and other toxic substances. The levels of substances detected are also quantified.

Samples are also analysed in criminal cases (e.g. death in custody, murder and alleged rape) where there is a need for drug analysis on biological samples. This aspect of the Laboratory's work is becoming increasingly important as there is an expectation of a fast and comprehensive analytical service for a wide range of drugs and alcohol which form part of the files for the prosecution. This also leads to an increased demand for staff to attend and give evidence in legal proceedings.

Historically, there have been significant delays in issuing some Coroners' results, primarily because of the number of laboratories involved in the analysis chain. Since March 2013 all testing has been centralised in the State Laboratory and to deal with the resultant increase in samples, the Laboratory has introduced new high resolution liquid chromatography mass spectrometry (LC/MS) based drug screening methods. The development of new test methods, in combination with connectivity of the LC/MS instruments to the Laboratory Information Management System (LIMS), has greatly improved the range and overall efficiency of the service.



Sample numbers increased by >40% in 2013 and this had a negative impact on the workflow in the Laboratory and resulted in longer reporting times in 2013 than is acceptable to the Coroners. Only 77% of samples were reported within 3 months compared to 92% in 2012. However, for the large proportion of samples that were previously sent to an alternative laboratory for drug screening, the overall turnaround time for results to be available (in many cases up to 6 months) was significantly reduced. The Laboratory will continue to develop new LC/MS methods of analysis and implement new testing protocols during 2014 to improve the timeliness of the service provided and meet the required target of 90% of samples reported within 3 months.

State Laboratory staff are pro-active about using their wide network of contacts to keep abreast of the latest drugs of abuse in circulation and where possible they extend the scope of the methods of analysis to include these new compounds as soon as reference standards become available. The Laboratory is also represented on the Early Warning and Emerging Trends sub-committee of the National Advisory Committee on Drugs and Alcohol.

#### Environment Protection

Ireland is required to submit an annual report to the European Commission on the results of its fuel quality monitoring system (FQMS). To monitor compliance with European Union Directives that aim to control air pollution, petrol and diesel samples are analysed for a range of quality parameters on behalf of D/ECLG.

The new sampling regime introduced in 2012 was expanded in 2013 and all samples tested under the programme were taken at garage forecourts around the country. This resulted in a 28% increase in the number of samples tested compared to the previous year.

#### Public Health Protection

The State Laboratory assists the Irish Medicines Board (IMB) by analysing seized pharmaceutical and herbal products for the presence of pharmaceutically active compounds. State Laboratory staff also provide expert testimony in subsequent court prosecutions.

The use of the internet to purchase unlicensed medicines continues to be a cause for concern for the IMB. In general, with medicines purchased

# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 3: Coroners' Service & Public Health / Environmental Protection

online, there is no guarantee that the product is genuine and it may not contain the correct active ingredient or it may even contain dangerous toxic substances. In particular, the IMB has issued precautionary messages for consumers on the health dangers of taking any slimming products containing sibutramine, which increases the risk of heart attacks and strokes. It has also warned against purchasing products of herbal origin such as 'herbal Viagra'.

During 2013 analysis of illegal products for sibutramine and erectile dysfunction drugs such as sildenafil, tadalafil and vardenafil, which can have potentially serious adverse reactions, continued to make up a large proportion of the work performed for the IMB. A new accurate mass quadrupole time-of-flight liquid chromatography mass spectrometry (QTOF-LC/MS) method for the detection of 27 sildenafil-type drugs was developed and validated and this will be submitted for accreditation in early 2014. This new method will make it possible to significantly increase the number of samples tested with the same staff resources. Other products were tested for the sedative zopiclone and for local anaesthetics such as benzocaine and lidocaine.

### Heritage Protection

The State Laboratory continued to provide scientific assistance to a variety of bodies responsible for the conservation of Ireland's heritage throughout 2013.

The National Gallery of Ireland (NGI) was assisted with the repair and restoration of the Monet painting *Argenteuil Basin with a Single Sailboat* which was damaged while on public display in 2012. The Laboratory also provided assistance with restoration of some of the Jack B. Yeats paintings in the NGI's collection (*Cavalier Farewell, Power Station, Flower Girl and Beggarman's Shop*). Tiny fragments of paint from the paintings were analysed by X-ray Fluorescence Spectroscopy to detect the metal components in the pigments. This information can help to determine what materials were used by the artists and this in turn assists the NGI in choosing the appropriate approach to restoring and conserving the paintings.

The Laboratory also provided assistance to the National Gallery by testing very old mirrors of historical significance for mercury and tin.

### NUMBERS OF SAMPLES TESTED

#### Human Toxicology / Environment / Medicines / Heritage

Category of Sample	No. of Samples	No. of Analytes Tested For
Human Toxicology	5,445	338,888
Environment	283	2,484
Medicinal Products	80	183
Heritage Protection	44	54
<b>Totals</b>	<b>5,852</b>	<b>341,609</b>

### NEW METHODS DEVELOPED

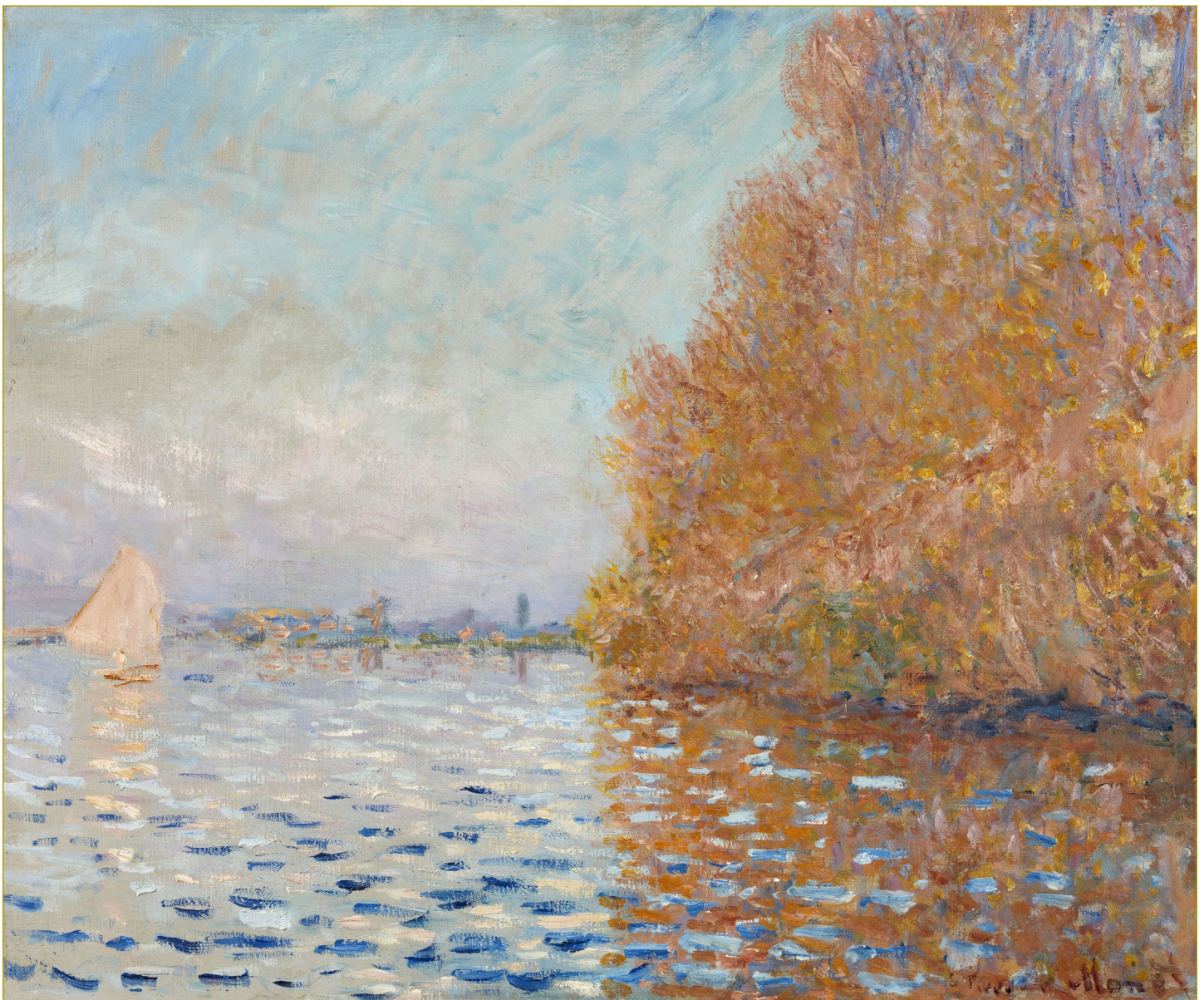
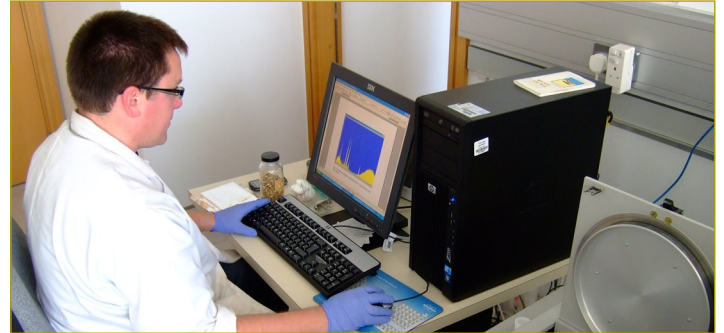
#### Human Toxicology / Environment / Medicines / Heritage

Test Method	Analytical Technique	No. of Analytes
High resolution screening method for drugs in urine	HRLC/MS/MS	80
Acidic / neutral drugs in blood	LC/MS/MS	12
Quantitative method for fentanyl in blood	LC/MS/MS	1
Drugs in medicinal products	HPLC/PDA	9
<b>Total</b>		<b>102</b>

# PROGRESS IN RELATION TO GOALS

## SUB-GOAL 3: Coroners' Service & Public Health / Environmental Protection

These mirrors were gifted to the NGI from the Milltown Estate and it was suspected that they contained mercury as a mercury-tin amalgam which was commonly used in mirrors from the relevant era. On analysis by XRF, the presence of mercury was confirmed and as a result the NGI put appropriate safety precautions in place to prevent exposure to toxic mercury vapour.



Argenteuil Basin with a Single Sailboat (Claude Monet)

# STUDENT PLACEMENT PROGRAMME

## State Laboratory Student Placement Programme

The State Laboratory has been involved in facilitating student placements for many years. The work placements/experience are a compulsory part of the students' four year honours degree course and the placements must be completed before the student begins their final year. The placements are confined to students whose degree courses are particularly relevant to the work of the Laboratory.

The Programme provides students with a developmental opportunity to apply skills and knowledge gained during the first three years of their degree course to a working environment. The Programme also offers the students useful insights for their final year of study and prepares them for seeking employment once they have completed their studies. In addition, it gives the students a realistic and positive insight into the modern Public Service and thereby encourages them to view a career as an Analyst or a Chemist in the State Laboratory and other public service laboratories positively.

During their placement, students obtain experience of the work in the Veterinary Toxicology, Human Toxicology and Animal Feedingsuffs Sections of the Laboratory. They carry out routine analyses, under the supervision of Senior Analysts/Analysts, on food, animal feed, fertilizers, and biological fluids using classical and instrumental techniques. All the analyses are carried out according to the Laboratory's quality and safety policies and, in doing so, the students acquire knowledge of the underlying analytical principles and relevant legislative or other background material.

The colleges and degree courses for 2013 were:

- ◆ Dublin City University – Analytical Science;
- ◆ Limerick Institute of Technology – Pharmaceutical and Forensic Analysis;
- ◆ Dublin Institute of Technology – Forensic and Environmental Analysis;
- ◆ National University of Galway - Biopharmaceutical Chemistry.

## John Jennings, Student Analyst, Human Toxicology Section, 2013

"My time spent in the Human Toxicology department of the State Laboratory has given me invaluable hands on experience as a member of a team within a busy lab setting.

This time has given me practical experience using instruments I would otherwise never have had the opportunity of using. I was able to put into practice techniques learned in years 1-3 at LIT. Techniques such as micro-pipetting with speed and accuracy were able to be perfected. Also theory taught, such as head space or solid phase extraction, were seen in practice. I was given the opportunity to use techniques and instruments as well as software (LIMS) used in many lab settings which will enhance my job prospects in the future.

I was treated as if I were a full time member of the team with all the responsibilities that come with the job. My targets were manageable which allowed me time to spend exploring all the techniques used by the Human Toxicology department in analysing samples. I also got to spend time with those in method development to see how new techniques are devised, tested and implemented.

Every member of the Human Toxicology team gave time to talk with me and offer their experience and knowledge as well as giving me career advice.

Overall, the time I spent working in the State Laboratory was a worthwhile and enjoyable experience."



## Administration

Under the *Public Service Stability Agreement 2013 – 2016* (the Haddington Road Agreement), further measures were identified to:

- ◆ build on the significant levels of reform that took place across the public service under the Public Service Agreement 2010 – 2014 (the Croke Park Agreement); and
- ◆ underpin the delivery of a more integrated, efficient and effective public service.

In line with the Haddington Road Agreement, the State Laboratory implemented reform measures in the following areas:

- ◆ Performance management;
- ◆ Flexible working arrangements;
- ◆ Work-sharing arrangements; and
- ◆ Workforce restructuring.

An ongoing challenge for the Laboratory is addressing how service delivery is to be maintained in the context of reduced staff numbers and resources.

## Staffing

Five staff left the Laboratory during 2013. One Senior Chemist and one Clerical Officer retired; one Laboratory Analyst went on Career Break; one Laboratory Analyst transferred to another public sector body; and one Higher Executive Officer on secondment was replaced following an interview process. Three Laboratory Analysts were appointed on temporary contracts.

In 2013, the Laboratory continued with its student placement scheme in association with Dublin City University; Dublin Institute of Technology; Galway Mayo Institute of Technology; Limerick Institute of Technology; University College Cork; and University of Limerick. Four students were placed in areas complementary to their academic discipline for a period of six months.

## Sick Leave

In 2013, the Laboratory's Lost Time Rate was 2.13% (down from 2.86% in 2012). There was a 25% drop in the number of sick days taken by State Laboratory staff in 2013 when compared with 2012.

## Flexible Working Arrangements and Equality of Opportunity

State Laboratory staff can avail of flexible working arrangements including work-sharing, flexitime, parental leave and shorter working year. However, since the moratorium on recruitment was introduced in 2009, staffing shortfalls arising from staff availing of these arrangements have to be absorbed by the Laboratory.

Family Friendly Policies	
Scheme	% of staff availing of scheme in 2012
Worksharing	13%
Parental Leave	8%
Career Breaks	3%
Shorter Working Year	10%
Other unpaid leave	1%

The Laboratory is committed to an equal opportunities policy. The numbers of males and females in each grade at the end of 2013 is provided in the table below.

Gender Breakdown in The State Laboratory		
Grade	Female	Male
State Chemist	1	0
Principal Chemist	0	1
Senior Chemist	5	2
Assistant Principal Officer	1	0
Technical Information Manager	0	1
Chemist Grade II	5	4
Chemist	9	8
Higher Executive Officer	1	1
Senior Laboratory Analyst	5	6
Laboratory Analyst	15	7
Staff Officer	1	1
Clerical Officer	2	4
Head Laboratory Attendant	0	1
Laboratory Attendant	0	5
<b>Total</b>	<b>45</b>	<b>41</b>

## GOVERNANCE

### Quality System

The quality of analytical work from the State Laboratory is enhanced through compliance with the quality standard ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories). The State Laboratory operates in accordance with a documented quality system and is currently accredited to ISO/IEC 17025 by the Irish National Accreditation Board (INAB Reg. No. 146T) for 49 test methods covering 339 analytes.

### System of Internal Financial Control

The State Chemist's Statement on Internal Financial Control which was submitted to the Office of the Comptroller and Auditor General along with the State Laboratory's 2013 Appropriation Account can be found at Appendix I on the following page.

The State Laboratory's Audit Committee met twice in 2013. Internal audits were conducted on Financial Reporting and Treasury and Payroll. A Review of the System of Internal Control was also carried out and progress on implementing corrective actions recommended in the course of previous audits was tracked.

The Comptroller and Auditor General's Office carried out their annual audit of the State Laboratory's 2012 Appropriation Account in March 2013. No significant issues were raised during the audit.

## Financial Information

The table below summarises the State Laboratory's financial expenditure in 2013, with figures for 2012 provided for comparative purposes.

<b>Gross Expenditure</b>	<b>2012 €000</b>	<b>2013 €000</b>
A1. Salaries, Wages & Allowances	4,901	4,805
A2. Travel and Subsistence	22	20
A3. Training and Development & Incidental Expenses	184	220
A4. Postal & Telecommunications Services	65	63
A5. Apparatus & Chemical Equipment	1,757	1,979
A6. Office Premises Expenses	1,362	1,389
A7. Consultancy Services (Internal Audit)	14	14
<b>Gross Total</b>	<b>8,305</b>	<b>8,490</b>
<i>* Rounded figure</i>		

# APPENDIX I

## Statement by the Accounting Officer on Internal Financial Control

### Statement by the Accounting Officer on Internal Financial Control

#### 1. Responsibility for system of Internal Financial Control

As Accounting Officer I acknowledge my responsibility for ensuring that an effective system of internal financial control is maintained and operated by the State Laboratory. This responsibility is exercised in the context of the resources available to me and my other obligations as Head of Office. Also, any system of internal financial control can provide only reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded, and that material errors or irregularities are either prevented or would be detected in a timely manner. Maintaining the system of internal financial controls is a continuous process and the system and its effectiveness are kept under ongoing review.

The position in regard to the financial control environment, the framework of administrative procedures, management reporting and internal audit is as follows:

#### 2. Financial Control Environment

I confirm that a control environment containing the following elements is in place:

- ◆ financial responsibilities have been assigned at management level with corresponding accountability,
- ◆ reporting arrangements have been established at all levels where responsibility for financial management has been assigned,
- ◆ formal procedures have been established for reporting significant control failures and ensuring appropriate corrective action,
- ◆ there is an audit committee to advise me in discharging my responsibilities for the internal financial control system.

#### 3. Administrative Controls and Management Reporting

I confirm that a framework of administrative procedures and regular management reporting is in place including segregation of duties and a system of delegation and accountability and, in particular, that

- ◆ there is an appropriate budgeting system with an annual budget which is kept under review by senior management,
- ◆ there are regular reviews by senior management of periodic and annual financial reports which indicate financial performance against forecasts,
- ◆ a risk management system operates within the State Laboratory,
- ◆ there are systems aimed at ensuring the security of the ICT systems,
- ◆ there are appropriate capital investment control guidelines and formal project management disciplines,
- ◆ the State Laboratory is compliant with all relevant guidelines regarding procurement and is complying with all circulars relating to the mandatory use of framework agreements and contracts.

#### 4. Internal Audit

I confirm that the State Laboratory has an internal audit function with appropriately trained personnel, which operates in accordance with a written charter which I have approved. Its work is informed by analysis of the financial risks to which the State Laboratory is exposed and its annual internal audit plans, approved by me, are based on this analysis. These plans aim to cover the key controls on a rolling basis over a reasonable period. The internal audit function is reviewed periodically by me and by the Audit Committee. I have put procedures in place to ensure that the reports of the internal audit function are followed up.



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Ita Kinahan  
Accounting Officer  
State Laboratory  
1 March 2013

# APPENDIX II

## Meetings and Conferences attended by State Laboratory staff

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 list indicates the range of committee work undertaken by State Laboratory personnel and the meetings and conferences attended during 2013.

- ◆ Codex Alimentarius Committee on Methods of Analysis and Sampling (CCMAS) session in Budapest, Hungary
- ◆ Eurachem General Assembly in Finland
- ◆ CEN (European Committee for Standardization) 10<sup>th</sup> Meeting of CEN Technical Committee TC/327 WG4 on Animal Feedingstuffs, Brussels
- ◆ Workshop of the European Union Reference Laboratory for Feed Additives (EURL-FA) in Rikilt, the Netherlands
- ◆ Workshop of the EURL for Feed Additives (EURL-FA Control) to discuss results of Coccidiostats Proficiency Test Round 2 in Geel, Belgium
- ◆ Workshop of the EURL for Veterinary Drug Residues (RIKILT - Institute of Food Safety) in Wageningen, Netherlands
- ◆ Workshop of the EURL for Dioxins/PCBs in Rome and Teramo, Italy
- ◆ Workshop of the EURL for Dioxins/PCBs in Freiburg, Germany
- ◆ Mini-symposium of the EU FP7 Nanolyse Project in Brussels
- ◆ European Customs Chemists Conference in Paris
- ◆ Meeting of the EU Customs Laboratories Steering Group in Rome
- ◆ Consultative Committee on Quantity of Material (CCQM) Meeting, BIPM, Sevres, France
- ◆ EU Fuel Quality Committee Meeting in Brussels
- ◆ Meeting of UK & Ireland Forensic Toxicology Network (UKIAFT) in Glasgow
- ◆ Meeting of UK & Ireland Forensic Toxicology Network (UKIAFT) in Dublin
- ◆ Meeting of the International Association of Forensic Toxicologists (TIAFT) in Madeira, Portugal
- ◆ 50<sup>th</sup> Anniversary meeting of TIAFT in London
- ◆ AB Sciex European Clinical and Forensic Seminar Series in Birmingham, UK
- ◆ Labware European Customer Education Conference in Barcelona, Spain

### Attended on behalf of Revenue

- ◆ Meeting of the Scientific Sub-Committee of the World Customs Organisation in Brussels
- ◆ Seven meetings of the Project Group concerning the Chemical Chapters of the HS/CN in Brussels
- ◆ Two meetings of the Project Group concerning the Food Chapters of the HS/CN in Brussels and Stockholm
- ◆ Four meetings of the Customs Code Committee, Tariff and Statistical Nomenclature Section (AGRICULTURE/CHEMICAL SECTOR) in Brussels

### Attended on behalf of the Department of Jobs, Enterprise and Innovation:

- ◆ Meeting of the Economic Tariff Questions Group (Duty suspensions) in Brussels
- ◆ Two meetings of the Commission Expert Group on Textile Names and Labelling in Brussels
- ◆ Meeting of the European Network of National Experts on Textile Labelling, held in Ispra, Italy



# APPENDIX III

## Conference & Seminar Presentations by State Laboratory staff

### Conference & Seminar Presentations by State Laboratory staff

- ◆ Presentation on the analysis of Cadmium to the Advisory Panel, organisers and key stakeholders of the Teagasc Cadmium Research Stimulus project in Oakpark, Carlow
- ◆ Presentation on “Multi-agency Investigations of Large-Scale Poisoning Incidents in Livestock” in Dublin
- ◆ Presentation on the “Collaborative Investigation of Mortality in Birds of Prey” in Dublin
- ◆ Presentation on “Strategies for Human Drug Residue Analysis by LCMS” at UKIAFT, Dublin
- ◆ Presentation on “An Overview of Toxicology in the State Laboratory” to the Office of the Garda Ombudsman, Dublin
- ◆ Presentation on “An Effective Approach to the Analysis of Illicit and Prescribed Drugs in a Modern Toxicology Laboratory by LCMS” at the AB Sciex European Clinical and Forensic Seminar Series, Birmingham, UK
- ◆ Presentation on “An Effective Approach to the Analysis of Illicit and Prescribed Drugs in a Modern Toxicology Laboratory by LCMS” at the European MASStastic Voyage seminar in Dublin
- ◆ Poster presentation on “An Irish Approach to Post-Mortem Forensic Toxicology for new Psychoactive Substances: A Review of LCMS data from 2009 – 2013” at UKIAFT, Dublin

## APPENDIX IV

# Irish National Accreditation Board Accredited Tests Summary of Schedule of Accreditation \*

\* For further details, see our schedule of accreditation (Reg. No. I46T) on the INAB website ([www.inab.ie](http://www.inab.ie)).

Matrix	Measurand	Test Method	Method ID
Animal Feedstuffs	Crude Oils and Fats	EU Commission Regulation 152/2009 Annex III (H).	LSD A023
Animal Feedstuffs	Crude Oils and Fats	NIR Spectroscopy.	LSD A031
Animal Feedstuffs	Crude Ash	In house method based on EU Commission Regulation 152/2009 Annex III (M).	LSD A026
Animal Feedstuffs	Crude Ash	Gravimetric method using a Microwave Furnace.	LSD A030
Animal Feedstuffs	Crude Fibre	EU Commission Regulation 152/2009 Annex III (I).	LSD A024
Animal Feedstuffs	Crude Fibre	NIR Spectroscopy Screening Method.	LSD A031
Animal Feedstuffs	Moisture	EU Commission Regulation 152/2009 Annex III (A).	LSD A027
Animal Feedstuffs	Nicarbazin	In House HPLC method with DAD, based on IS EN 15782:2009.	LSD A050
Animal Feedstuffs	Arsenic	In House method: Dry Ashing and Hydride Generation Atomic Absorption Spectroscopy.	LSD A043
Animal Feedstuffs	Magnesium	In House method based on ISO 6869:2000: Microwave Digestion and Flame Atomic Absorption Spectroscopy.	LSD A044
Animal Feedstuffs	Lead and Cadmium	EN 15550. Pressure Digestion and Graphite Furnace Atomic Absorption Spectroscopy.	LSD A045
Animal Feedstuffs	Cobalt	In house method based on EN 15550. Pressure Digestion and Graphite Furnace Atomic Absorption Spectroscopy.	LSD A045
Animal Feedstuffs	Monensin, Narasin and Salinomycin	EN ISO 14183: HPLC with post column derivatisation.	LSD A051
Animal Feedstuffs	Crude Protein	EN ISO 16634-1:2008. Nitrogen content by consumption by the Dumas Principle.	LSD A032
Animal Feedstuffs	Ash Insoluble in HCl	EU Commission Regulation 152/2009 Annex III (N).	LSD A034
Animal Feedstuffs	Macro and Trace Elements (8)	IS EN 15621:2012. ICP OES with Microwave Digestion.	LSD A060 LSD A064
Animal Feedstuffs	Heavy Metals (5)	ICPMS with Microwave Digestion.	LSD A062
Animal Feedstuffs	Coccidiostats (11)	In house LCMSMS Method.	LSD A052
Animal Feedstuffs	Antibiotics (14)	In house LCMSMS Method.	LSD A053
Fertilisers	Nitrogen Content	Nitrogen content by consumption by Dumas Principle. In house method based on AOAC official method 993.13.	LSD A036
Drugs, Veterinary Preparations, Vitamins, Antibiotics, Hormones.	Flexible Scope (Analyte and Range) Identification and Quantification of pharmaceuticals samples	In house method using HPLC –DAD. Complies with relevant requirements of OJEC 2002/657/EC, ICH guideline Q2A, Q2B and Q6A and monographs from British, European and US Pharmacopoeia.	LSD J012 and LSD J014
Milk (Liquid & Powder)	Aflatoxin M1	Based on an EU/STM method. Extraction and IA column clean-up. RP HPLC with fluorescence detection.	LSD J025
Animal Feedstuffs	Aflatoxin B1	Based on an EU/STM method. Extraction and IA column clean-up. RP HPLC with fluorescence detection.	LSD J024
Feed and Cereals	Ochratoxin A	In house method using IA column cleanup and RP HPLC with fluorescence detection.	LSD J026
Feed and Cereals	Aflatoxin B1, Ochratoxin A	ROSA CHARM Immunoassay based method.	LSD J036

# APPENDIX IV

## Irish National Accreditation Board Accredited Tests Summary of Schedule of Accreditation \*

\* For further details, see our schedule of accreditation (Reg. No. 146T) on the INAB website ([www.inab.ie](http://www.inab.ie)).

Matrix	Measurand	Test Method	Method ID
Lettuce, Spinach and Cabbage	Nitrates	In house based on EN12014-2:1997-04. Anion exchange chromatography following extraction and clean-up.	LSD M062
Food and Feed	Dioxins and Dioxin-like PCBs (35)	In House GC/HRMS method.	LSD V052
Food and Feed	Dioxins and Dioxin-like PCBs	DR CALUX Bio Assay.	LSD V059
Petrol and Diesel Fuels	Sulphur	ISO 20884:2004: WDXRF. And In House Method based on ISO 20884:2004.	LSD N019
Liquid Fuels	Hydrocarbon content in Petrol (Gasoline and Biogasoline)	ISO 22854:2008 Multidimensional GC.	LSD N034
Pure starches, Animal feed, Foods, Petfoods	Starch	EU Commission Regulation 152/2009 Annex III (L); polarimetric method (Ewers principle).	LSD R013
Alcoholic Drinks	Alcoholic Strength by Volume	In house using a density meter following distillation.	LSD B010
Gas Oil	C.I. Solvent Yellow 124	In house method. Determination by HPLC.	LSD H009
Meat and Meat Products	Nitrogen	ISO 937:1978, Kjeldahl Method.	LSD R030
Meat and Meat Products	Hydroxyproline	ISO 3496 – 1994: In house method based on ISO 3496.	LSD R018
Blood & Urine	Ethanol	In house method. Determination by internal standard quantitation using Headspace GC with FID.	LSD T003
Blood	Carbon Monoxide	Automated Spectroscopic Method using an IL682 CO-Oximetry Instrument	LSD T036
Animal Urine	Flexible Scope (Matrices, Residues and Ranges) Hormones (17)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V031
Animal Kidney Fat	Flexible Scope (Matrices, Residues and Ranges) Gestagens: (5)	In house method by LCMSMS requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V033
Animal Plasma	Flexible Scope (Matrices, Residues and Ranges) Nitroimidazoles (7), Chloramphenicol	In house method by LCMSMS requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V038
Animal Plasma and Milk	Flexible Scope (Matrices, Residues and Ranges) Non Steroidal Anti Inflammatory Drugs (10)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V039
Animal Serum	Flexible Scope (Matrices, Residues and Ranges) Hormones (6)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V046
Eggs	Flexible Scope (Matrices, Residues and Ranges) Nitroimidazoles (7), Chloramphenicol	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V049
Urine	Flexible Scope (Matrices, Residues and Ranges) Corticosteroids (5)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V058
Poultry Liver	Flexible Scope (Matrices, Residues and Ranges) Resorcylic Acid Lactones (5)	In house method by LCMSMS requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V061
Animal Kidney	Flexible Scope (Matrices, Residues and Ranges) Sedatives (8)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V067
Animal Kidney	Flexible Scope (Matrices, Residues and Ranges) Non Steroidal Anti Inflammatory Drugs (11)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V068

# APPENDIX V

## ENERGY USE STATEMENT

### Energy Use Statement

In 2013, the gross energy consumption by the State Laboratory was as follows:

- ◆ Electricity 2,541,963 kWh
- ◆ Gas 4,010,326 kWh
- ◆ **Total 6,552,289 kWh**

The total gross energy consumption value compares with a baseline value (2006-2008) of 7,346,772 kWh and the Laboratory's energy performance indicator (EnPI) is 13.2% better than baseline using total useable floor area (TUFA) as the relevant metric for the Laboratory. This is in-line with the target set by the Sustainable Energy Authority of Ireland (SEAI).

Laboratories by their nature are very energy intensive buildings and because there was no safe heat recovery system available in the early 2000's when the Laboratory was built, a significant amount of the energy used to heat the building is lost through the air-handling systems. Retro-fitting energy recycling system to recover heat from the expelled air has been investigated but it was found not to be economically feasible at this time.

In recent years, the Laboratory has invested heavily in modern LCMS instrumentation that has allowed it to significantly increase the range and number of analytes tested for. While this technology has increased the Laboratory's electricity requirements, this has been more than offset by the reduced requirement for fumehoods and it has allowed the laboratory to reduce the number of air changes per hour and save on gas usage.

In summary, the reduction to date in energy consumption has been achieved by the following measures:

- ◆ reducing the number of air changes per hour in the laboratories to the minimum required to ensure a safe work environment for staff;
- ◆ reducing the flow on air-handling and extraction systems outside of working hours; and
- ◆ installing individual switches on fume cupboards to allow users to control their operation more efficiently.

# APPENDIX VI Organisation Chart

(as at 31<sup>st</sup> December 2013)



# APPENDIX VII

## Staff List

By Grade (as at 31<sup>st</sup> December 2013)

<b>State Chemist</b>			
Ita Kinahan			
<b>Principal Chemist</b>			
Michael Nangle			
<b>Senior Chemist</b>			
Patricia Bonner Dr. Gráinne Carroll	Dr. Yvonne Kavanagh John McBride	Dr. Siobhán Ní Ghríofa Dr. Liam Regan	Dr. Paula Shearan
<b>Chemist Grade II</b>			
Frances Mahon Dr. Ed Malone Eileen McCarron	Dr. Seán McGowan Eddie McGrath Joanne Ryder	Dr. David Savage Dr. Julie Tierney Claire Timbs	
<b>Technical Information Manager Grade II</b>			
Dr. Michael O’Gorman			
<b>Chemist</b>			
Dr. Jonathan Carroll Dr. Eleanor Dixon Dr. Geraldine Dowling Michael Doyle Dr. Seán Earley	Dr. Pierrick Février Dr. John Fields Niamh Fitzgerald Joe Fitzsimons Myra Keogh	Una McArdle Dr. Mark McDonald Audrey Nugent Sharon O’Keeffe John Reilly	Ruth Reilly Mairéad Webster
<b>Senior Laboratory Analyst</b>			
Sheevaun Cody Angela Cunningham Bernard Hanratty	Tom Harbison Seán King Neil Lucey	Marian Lyons Noreen Monahan Fiona Noonan	Aengus Ó Briain Keith Pearson
<b>Laboratory Analyst</b>			
Sinéad Bermingham Ann Marie Bragason David Canny Patricia Carter Simon Daly Laura Flynn	Marella Gallagher Madeleine Gibbons Carol Gleeson Margarete Houlihan Ray Kelly Sheila Martin	Vicky MacEoin Ciara McDonnell Alan Murphy Amy Nagle Olivia O’Connor Colm Reid	Denis Ryan Dennis Sheehan Johanna Skelton Fiona White
<b>Head Laboratory Attendant</b>			
Paul Hirtes			
<b>Laboratory Attendant</b>			
Simon Chiu Tom Gaule Syl O’Neill	Declan Powell Chris Taaffe		
<b>Corporate Services</b>			
Mary Keenan - Assistant Principal Officer Nuala Talty - Higher Executive Officer Pat Fannin - Higher Executive Officer Phyllis Barry - Staff Officer John Clancy - Staff Officer	Ciarán Browne - Clerical Officer Damien Duffy - Clerical Officer Elizabeth Ellard - Clerical Officer Ross Fitzgerald - Clerical Officer Geraldine Gaffney - Clerical Officer Damian Savage - Clerical Officer		