



2019
Annual Report



The State Laboratory
An tSaotharlann Stáit

CONTENT

Introduction by State Chemist	3	Administration	29
		Governance	33
Overview	4		
PROGRESS IN RELATION TO GOALS		APPENDICES	
STRATEGIC GOAL 1		I Statement by the Accounting Officer on Internal Financial Control	35
	6		
Support National Food and Feed Safety Programmes		II Meetings and Conferences attended by State Laboratory Staff	37
STRATEGIC GOAL 2		III List of INAB Accredited Tests	39
	15		
Support Revenue Collection and Fraud Prevention		IV Organisation Chart (as at 31st December 2019)	42
STRATEGIC GOAL 3			
Provide a Forensic Toxicology Service to the State	19	V Staff List by Grade (as at 31st December 2019)	43
STRATEGIC GOAL 4			
Support Public Health and Environment Protection Initiatives	23		
STRATEGIC GOAL 5			
Provide a Centralised Veterinary Toxicology Service	26		

INTRODUCTION

I am very pleased to present this annual report on the work of the State Laboratory for 2019. It was another productive and successful year and one in which the laboratory continued to innovate and grow to expand its range of testing services. It was the final year of the Laboratory's current statement of strategy and I am happy to report that the Laboratory achieved most of its strategic objectives and provided a high quality, efficient and timely analytical chemistry and expert scientific advisory service to the State and to its public sector clients over the lifetime of this strategy statement. It improved national capability in chemical analysis for official control and regulation purposes, by introducing many new test methods, and it expanded its scope of accreditation to cover many new analytes. It also successfully transitioned to the new version of the ISO 17025 accreditation standard in 2019.

As part of its strategy to raise its profile, the State Laboratory participated in the 2019 BT Young Scientist and Technology Exhibition. Staff from the Laboratory set up simple chromatography experiments that were hugely popular with the young people who visited the stand, their teachers and families. The experiments were visual in nature and proved to be an excellent tool to promote and explain the work of the State Laboratory, and the public service role it plays as an analytical chemistry laboratory within the Civil Service.

There continued to be significant staff changes throughout 2019. Due to the highly specialised and innovative nature of its work, it is a priority for the Laboratory to develop and retain highly skilled and expert staff. To do this, the Laboratory strives to foster an interesting and engaging work environment for staff and provide opportunities for career development. The comprehensive action plan put in place in response to the 2017 Civil Service Employee Engagement Survey was reviewed regularly during 2019 to ensure that all agreed actions were being implemented.

The State Laboratory has a legal obligation to provide a safe work environment for all its staff and visitors. To remain compliant with current Health and Safety legislation and mitigate the hazards associated with working with potentially dangerous chemicals, the Laboratory recruited a qualified Health and Safety manager in March 2019. This ensured the effective management of routine health and safety activities and facilitated the implementation of a comprehensive safety programme throughout 2019.

There was also good progress made with upgrading the ICT

infrastructure and the Laboratory Information Management System to support the delivery of services and improve efficiencies.

Full details of the work of the State Laboratory and its achievements in 2019 are presented in this annual report. As always, without the commitment, dedication and professionalism of its staff none of this would have been possible. I would like to sincerely thank all the staff of the Laboratory for their hard work, enthusiasm and support throughout the year.



Ita Kinahan

State Chemist

OVERVIEW

The State Laboratory is the Government's principal analytical chemistry laboratory and it is a scheduled office under the aegis of the Department of Public Expenditure and Reform. Its high level objective is to provide an accredited, high quality and timely chemical analysis and advisory service to Government Departments and Offices, which supports their policies, regulatory programmes and strategic objectives, particularly in the areas of food and feed safety; revenue collection; fraud prevention; public health and environment protection. It also provides centralised forensic toxicology services to the Coroners and other public sector clients.

In 2019, a total of 14,234 samples were analysed for 625,122 analytes, a 3% increase in the number of samples submitted for analysis and a 14% increase in the number of analytes tested for compared to 2018. The main reasons for the increases were increased numbers of food and feed samples submitted for dioxin and mycotoxin analysis. The number of food of animal origin samples tested for veterinary drug residues also increased by 7% as the Laboratory continued to expand its level of steroid testing to include analyses that were previously outsourced.

Analytical chemistry is a continually evolving science 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. EU and Irish legislation is regularly updated to reflect technological developments and the Laboratory must continually update and improve its methods of analysis. In 2019, new methods of analysis were developed and existing methods were extended so that 66 new tests were introduced, using a variety of analytical techniques.

The Laboratory has an important advisory function, particularly in the Customs and Excise area, and its staff act as the Irish representatives at EU scientific committees and technical Working Groups on behalf of Revenue and the Department of Business, Enterprise and Innovation (DBEI). Laboratory staff also actively participate and represent Ireland as national experts in

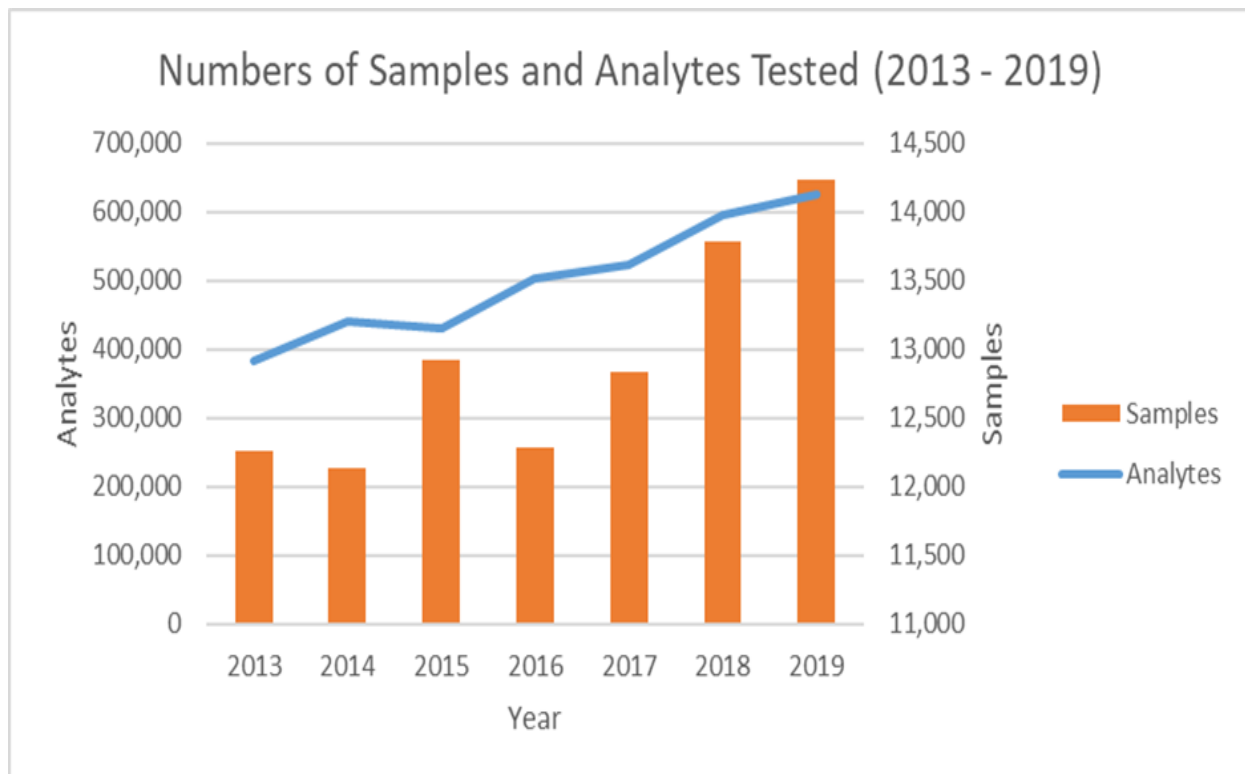
international standardization bodies such as Codex Alimentarius, the European Committee for Standardisation (CEN), Eurachem and the Consultative Committee on the Amount of Substance (CCQM).

The Laboratory has also been designated by the Department of Health for the purposes of carrying out testing under the Tobacco Products Directive and good progress was made during 2019 with setting up a tobacco testing laboratory, with the necessary controlled temperature and humidity environment for testing cigarettes using a smoking machine. The Laboratory also supported the HSE by developing methods of analysis to test e-cigarettes and e-liquids for nicotine and other constituents.

This annual report details the implementation of the State Laboratory's Strategy Statement for 2019 and highlights the Laboratory's main activities and achievements under each Strategic Goal.

OVERVIEW—NUMBER OF SAMPLES

Strategic Goal	No. of Samples Tested	No. of Analytes Tested For
Food and Feed Safety	5,334	41,573
Revenue Collection and Fraud Prevention	2,016	10,473
Forensic Toxicology Service	6,485	570,411
Public Health and Heritage Protection	85	144
Veterinary Toxicology Service	314	2,521
Overall Total	14,234	625,122

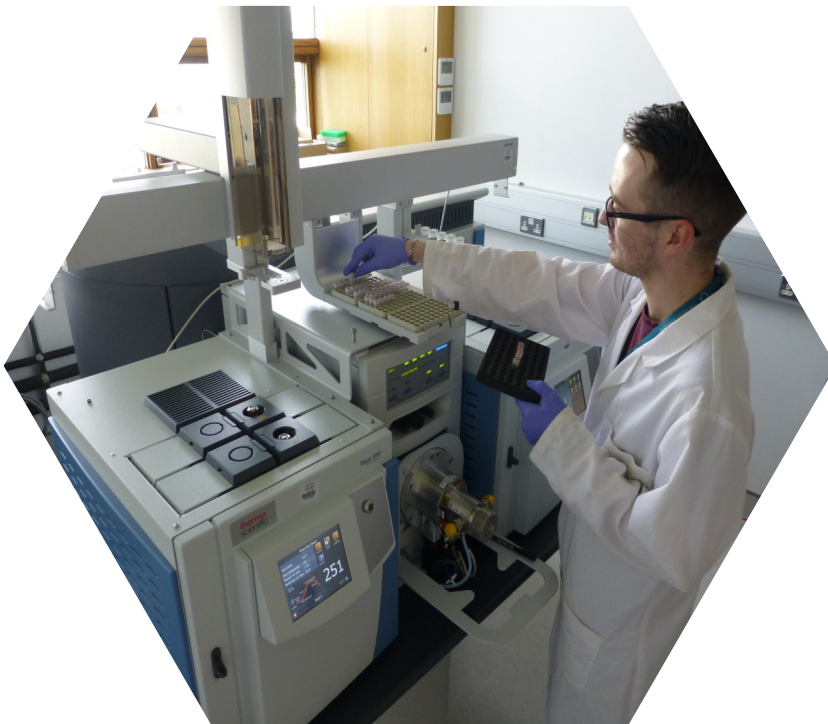


STRATEGIC GOAL 1

Support National Food and Feed Safety Programmes

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 the Department of Agriculture, Food and the Marine (DAFM) and the Food Safety Authority of Ireland (FSAI) in ensuring the quality and safety of Irish food 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.



STRATEGIC GOAL 1—FOOD AND FEED SAFETY

A new Official Controls Regulation, (EU) 625/2017, came into force fully in December 2019. This regulation provides the overarching legislative framework and legal basis for enforcing food legislation and covers official controls across the whole agri-food chain. It impacts about 50% of the work of the State Laboratory as it applies to all the testing carried out on feed and food to ensure the quality and safety of food and protect the consumer. It requires that all test methods used for official control purposes are accredited to ISO 17025 and there is greater emphasis on Competent Authority and National Reference Laboratory oversight of all testing.

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 Department of Agriculture is the central Competent Authority responsible for the enforcement of EU legislation with regard to animal feedingstuffs. 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, including importation, storage, manufacture, trade and use at farm level.

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), ash, fibre and moisture contents and do not contain elevated levels of toxic components (dioxins, mycotoxins, melamine, heavy metals).

During 2019, work was completed on the development and validation of a new ICP-MS method for heavy metals and selenium in inorganic feed matrices. It is hoped to submit this for accreditation in 2020.

A number of priority or unusual samples were submitted for analysis in 2019 as follows:

In June, two samples of citrus pulp from a large stock that had been imported to address the fodder crisis in 2018 were submitted for testing to determine if this pulp was still safe (tested for mycotoxins, dioxins

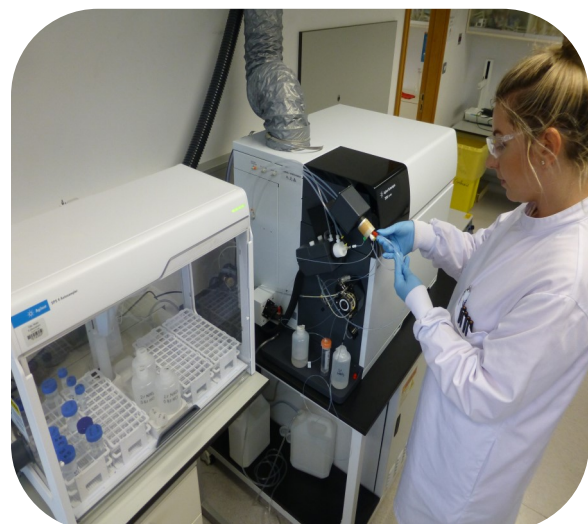
and other undesirable substances) and to test its nutritional content (fibre, protein and ash).

Four samples of seaweed meal were received in June. Three of the samples were from the same dried seaweed stock but had been ground to different levels. There was a query as to whether this affected the arsenic result.

To facilitate a trade agreement with China, samples of a rumen buffer product, made in Ireland from calcareous marine algae, were tested for fluoride, heavy metals, trace elements and dioxins in August and September.

In October nine samples of poultry feed were submitted for mycotoxin and heavy metal analysis following an incident on a farm whereby eggs and poultry had to be destroyed.

In November, four samples were submitted for analysis following an issue at a mill, where there was some doubt over the constituents of the feed.



STRATEGIC GOAL 1—FOOD AND FEED SAFETY

Medicated Feed

Medicated feed is an important route for administering veterinary medicinal products to animals, in particular to animals intended for food production. Two-thirds of veterinary anti-microbials used in Ireland are formulated as pre-mixes or oral remedies. These formulations are used mainly for administering a veterinary drug to animals reared in large groups such as a flock of birds or a group of pigs, where many animals need to be treated at the same time.

In early 2019, a new EU regulation came into force for medicated feed. This legislation specifies the list of antimicrobials that can be used in feed and lays down the tolerances that apply where the composition of a medicated feed is found to deviate from the amount of an antimicrobial active substance indicated on the label.

Ireland has strict regulations surrounding antimicrobial usage in food producing animals with defined withdrawal periods in place and the correct dosage rate is important to prevent a build-up of antibiotic resistance. At a feed manufacturing facility, it is possible that what is termed an “unintended and unavoidable” presence of low levels of certain veterinary drugs can be found in the feed after a batch of medicated feed has been produced using the same facility.

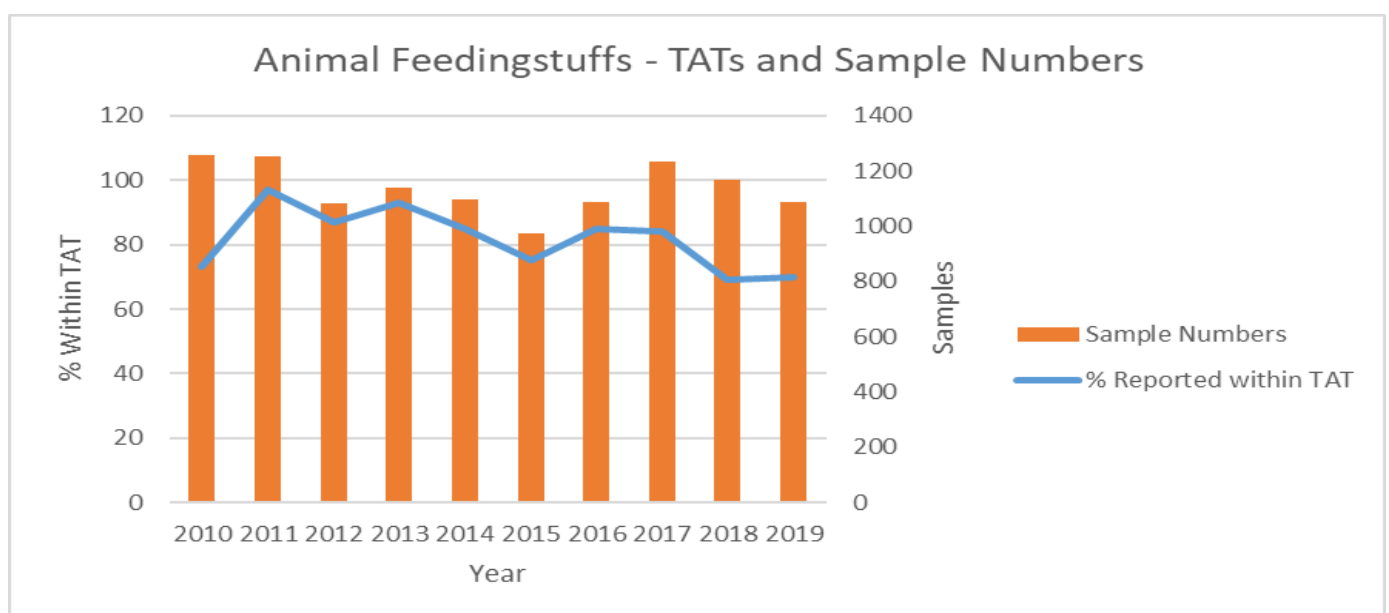
The State Laboratory tests feed samples for authorised veterinary medicines and coccidiostats (feed additives used to prevent coccidiosis, a major disease in poultry

and other farm animals) to ensure that the correct therapeutic levels are present. The Laboratory also tests for carryover levels of 11 coccidiostats in rations destined for non-target species and for the presence of low levels of 14 banned or prescription only antibiotics in a range of feeds. A new LCMS/MS method is in development to test for cross-contamination levels of authorised antibiotics in feed that will be validated for use during 2020.

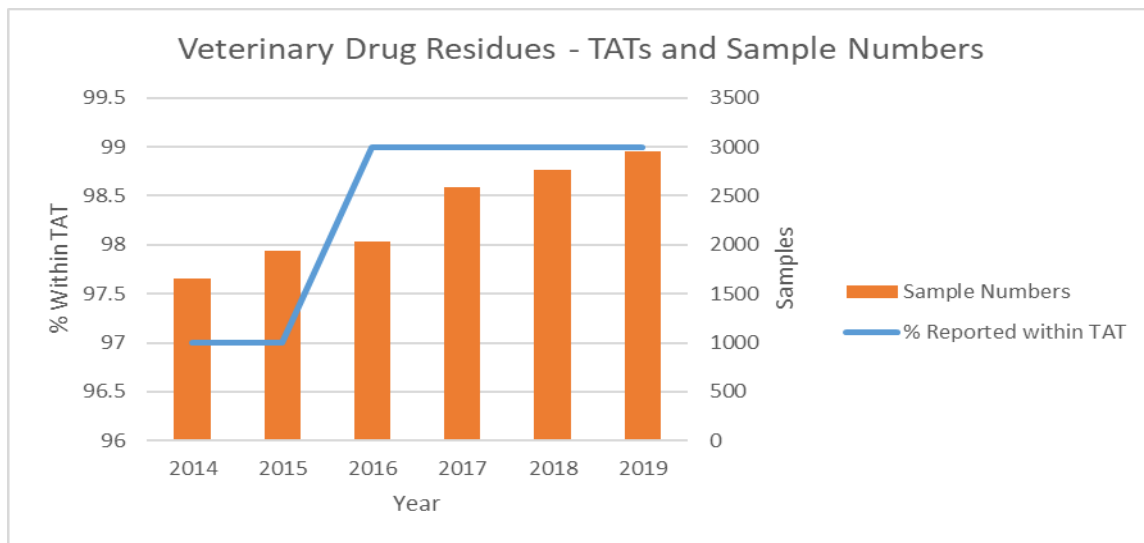
Food Safety

To ensure that food produced in Ireland is of the highest standard, the FSAI and DAFM 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 Service Level Agreements in place with all DAFM divisions to which it provides analytical and advisory services. In March 2019, the State Laboratory signed an overarching Service Contract Agreement with the FSAI, in line with its strategy to ‘explore the feasibility of providing analytical services to the FSAI where there are gaps in existing services’.

The State Laboratory has developed a high level of expertise in the analysis of veterinary drug residues and other chemical contaminants such as dioxins and mycotoxins in food and it is continually developing new methods of analysis to expand its range of testing.



STRATEGIC GOAL 1—FOOD AND FEED SAFETY



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), DAFM administers a National Residues Monitoring Plan (NRMP) 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, deer, poultry, milk, eggs and honey. Nine different matrices are tested including blood, serum/plasma, urine, kidney, liver and fat depending on the analytes being tested for.

There was a 7% increase in the number of samples tested for veterinary drug residues in 2019, mainly due to increased testing for banned steroids in urine and serum samples and for nitroimidazoles in plasma. The average time taken to report results was 11 days and >99% of samples were reported within 30 days.

A number of new tests were developed including the steroids stanozolol and zearalanone in urine and the NSAIDs Ibuprofen and 4-Methylaminoantipyrine in milk.

All four analytes were added to the Laboratory's scope of accreditation under flexible scope.

The problem of horses that were unfit for human consumption potentially entering the food chain continued during 2019. In June, Gardaí, the Department of Agriculture and the FSAI, searched seven premises as part of an investigation into the tampering with identification passports and microchips of horses presented for slaughter in Ireland. The main problem associated with these horses is the potential for phenylbutazone (also known as 'Bute'), being detected in the meat. This drug is prescribed for use in sport horses but they must subsequently be excluded from the food chain. In 2019, 156 equine kidney samples were submitted for analysis. The Laboratory prioritised this testing, and provided results within an average turnaround time of five working days. This short turnaround time put a significant strain on the Laboratory's resources but it was necessary to protect Ireland's reputation as a major exporter of high quality fresh meat and meat products.

STRATEGIC GOAL 1—FOOD AND FEED SAFETY

Monitoring of Dioxins and other Persistent Organic Pollutants

Persistent organic pollutants (POPs) represent a group of chemicals that are not easily degraded and so can accumulate and persist for long periods, not only in the environment but also in several fat-containing foods. They include dioxins and polychlorinated biphenyls (PCBs), which are highly toxic environmental contaminants that are formed during the combustion of chlorine-containing materials and must be excluded from the human and animal food chain. Approximately 90% of human exposure to dioxins results from the consumption of contaminated food such as dairy produce, meat and fish.

The State Laboratory tests a wide range of feedingstuffs (including recycled foods used for animal feeding) for dioxins and PCBs, in addition to infant formula samples and foods such as milk and vegetable oils used in the dairy industry. Other matrices tested for dioxins include fat and liver samples under the National Residue Monitoring Plan, fish and egg samples for the FSAI and milk samples for the Environmental Protection Agency.

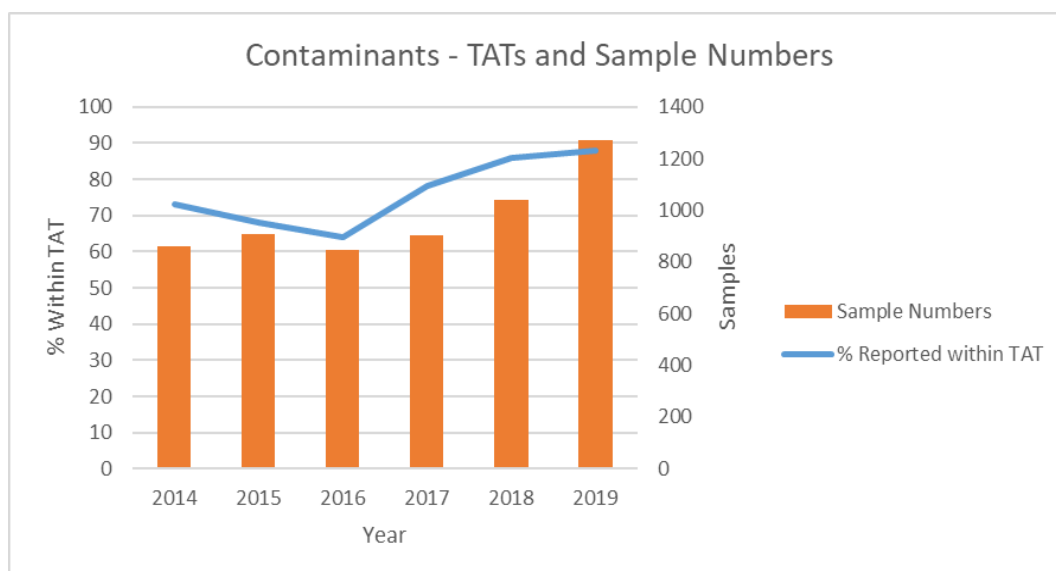
Other POPs include brominated flame-retardants (BFRs) and perfluoroalkylated compounds (PFAs), which are used in firefighting foams and to provide stain and dirt repellence in carpets, packaging and clothing. The State Laboratory is the designated National Reference Laboratory (NRL) for all halogenated persistent organic pollutants in food and feed.

PFAs are man-made pollutants that are also known as “forever chemicals”. They are not currently regulated, but can be found in food packaging, household products,

drinking water and food of animal origin. Recent medical research has shown these chemicals to have adverse health implications e.g. liver damage, decreased fertility and to cause cancer. The FSAI has requested the State Laboratory to develop methods of analysis to test for PFAs in food samples. A new method of analysis to test for 14 of the most common PFAs in samples of fish and liver by LCMS/MS was developed in 2019 and it is hoped to validate it for routine use during 2020.

Investigation into elevated dioxin levels in horse meat

In May 2019, elevated levels of PCBs were detected in an equine fat sample during a routine screen for PCBs in DAFM laboratories and subsequent analysis in the State Laboratory showed the sample contained dioxins at levels significantly higher than baseline levels from previous years. Dioxin results for equine samples tested in 2017 and 2018 were reviewed but there was no clear correlation between the age of the horse at slaughter and the levels of dioxins found. Although there are no legislative limits for dioxins in equine livers, the results detected for the 2019 sample were considerably higher than had been observed previously and thus a RASFF (Rapid Alert System for Food and Feed) alert was raised. As part of a follow-up investigation, two further suspect equine fat samples were tested in September 2019, but the levels found were more closely aligned with the average values seen over previous years, suggesting that the elevated results related to an isolated incident. There will be increased testing of equine fat samples for dioxins in 2020 and the data generated will feed into an EFSA evaluation of dioxin levels in horse meat and the setting



STRATEGIC GOAL 1—FOOD AND FEED SAFETY

Investigation into a novel analytical approach for Dioxin analysis by Atmospheric Pressure Gas Chromatography (APGC)

During 2019, a significant amount of effort was invested in the development of a novel analytical approach to the analysis of dioxins and PCBs in food and feed. This innovative work initially showed excellent potential and proved capable of achieving the required analytical criteria for detecting dioxins at very low concentrations in a number of food matrices.

However, a number of issues arose when it came to the analysis of complex feed samples. The State Laboratory worked with the supplier's application specialists to try to resolve the problems encountered but unfortunately this was not possible within a reasonable timescale. The application was deemed not fit for purpose for the analysis of complex matrices at this time as the priority for the State Laboratory was to have sufficient instrument capacity to meet its clients' requirements for routine analysis.

Unfortunately, the APGC project had to be brought to a close and a new instrument was purchased to support routine dioxin analysis in late 2019. The supplier of the APGC instrument has offered to collaborate with the State Laboratory further on this application to build on the work completed to date. A decision will be made on this once the scope and details of a potential collaboration are available.



Multi-Agency Project to Evaluate Data from the 2008 Dioxin Pork Crisis

Following the 2008 dioxin contamination incident in Ireland, DAFM undertook a "Dioxin and PCB Transfer Study in Cattle and Pigs". A number of pregnant sows, fattening pigs, weaner pigs, bulls and heifers were removed from contaminated herds and the dioxin and PCB levels were monitored in these animals over time. This project generated a large amount of data on maternal transfer, half-life and compartmentalisation of dioxins in animal tissues. To date, this data hasn't been analysed due to staffing/resourcing issues.

In 2019 an interdepartmental group, including personnel from DAFM, FSAI and the State Laboratory, came together to review this unique data which is valuable to many groups including the EURL/NRL halogenated POP network, the Dioxin community globally, the agri-food and food safety regulators. In the event of a future contamination incident the data, once interpreted, could be used to inform decision-making on food recalls and the culling of affected animals. This could influence both the economic and food safety outcomes of such an incident.

The State Laboratory led the data review work in 2019 by sorting and interpreting the large amount of data available. A preliminary presentation was prepared for the interdepartmental group in October, which was very well received. The data analysis work will continue in 2020 and an outline will be presented to the major stakeholders to highlight its value, and potentially seek funding for the continuation of the work.

STRATEGIC GOAL 1—FOOD AND FEED SAFETY

Mycotoxins

Mycotoxins are substances naturally produced by moulds and fungi that can be present on a crop in the field or can affect stored grain. Many mycotoxin-producing fungi are able to produce more than one type of mycotoxin and several types of fungi can affect a single crop leading to the presence of multiple mycotoxins. Mycotoxins can cause severe symptoms of toxicity at high doses and they enter the food chain via contaminated animal feedingstuffs.

The State Laboratory uses a multi-analyte LCMS/MS method capable of detecting 16 mycotoxins in feed (12 quantitatively, 4 qualitatively) for routine testing of feed samples. There was a 9% increase in the number of feed samples tested for mycotoxins in 2019 due to the higher risks of mycotoxin contamination in imported feed arising from global warming.

Food samples of animal origin are also tested under the National Residue Monitoring Plan with samples of milk and liver tested for aflatoxin M1 and ochratoxin A respectively. The scope of accreditation of the aflatoxin M1 method was extended to include the analysis of infant formula, following an agreement with the DAFM Dairy Science Laboratory to add tests for aflatoxin M1 and melamine to the annual testing programme for dioxins in 18 samples of infant formula.

The Laboratory also participated in an international collaborative study with other NRLs, and EU and US laboratories, which was organised by Nestlé through the EURL, to evaluate the performance characteristics of an LCMS/MS method for the simultaneous determination of 12 mycotoxins in food. The method combined the simplicity of the QuEChERS approach with the efficiency of immunoaffinity column clean-up to enhance the sensitivity of the method for some matrices. The study required the analysis of 30 samples.

Patulin is a mycotoxin produced by moulds commonly found on rotting apples and the amount of patulin in apple products indicates the quality of the apples used in production. An accredited HPLC method was used to determine patulin levels in 32 samples of apple juice to assist DAFM to monitor the quality of apple juices produced in Ireland.

Ergot alkaloids are mycotoxins produced by fungi that attack a wide variety of grass species, including small grains, during the growing season. In 2019, the State

Laboratory participated in an EURL proficiency test for the quantitation of 12 ergot alkaloids, for which maximum levels are being considered, in food & feed products. One feed matrix (naturally contaminated rye flour) and one food matrix (mix of wheat & oat flours) were analysed.

Plant Toxins

Pyrrrolizidine alkaloids are naturally occurring plant toxins that can cause chronic poisoning and potentially result in liver failure in cattle, horses and pigs. Grazing animals normally avoid plants that contain pyrrrolizidine alkaloids, but animals can be poisoned by eating the plant material incorporated into hay, silage and pellets.

During 2019, the Laboratory participated in a CEN collaborative trial of an LCMS/MS method for determining 27 pyrrrolizidine alkaloids in 14 samples of feed materials, complementary and complete feeds. The Laboratory also participated in an EURL research study that involved the quantitation of 44 pyrrrolizidine alkaloids, 21 of which are being considered for maximum levels in legislation, 14 were isomers of these and nine were of additional interest in food and feed matrices. Two samples were tested in the study, one a feed sample (alfalfa/lucerne) and the other a herbal tea.

Nitrates

There is 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 DAFM are analysed by the State Laboratory on a regular basis. The Laboratory also participated in an LGC certification study for the production of a new reference material by testing eight samples of kale powder for nitrate content.

Hemp Analysis

Hemp crops can only be grown in Ireland under licence from the Health Products Regulatory Authority and there is a requirement to inspect 30% of the area sown and ensure that the tetrahydrocannabinol (THC) content of eligible varieties does not exceed 0.2%. The State Laboratory tests samples of hemp plants for THC content for DAFM BPS Division using a quantitative GC method laid down in Regulation (EC) No 796/2004. The area sown with hemp has increased in recent years with a consequent increase in the number of samples submitted for analysis.

STRATEGIC GOAL 1—FOOD AND FEED SAFETY

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 materials 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. In May 2019, the EU adopted new rules for placing fertiliser products on the EU market. The new regulation, which replaces the previous 2003 fertiliser regulation, covers all types of fertilisers (mineral, organic, soil improvers, growing media etc.) and sets harmonised limits for a range of contaminants, such as cadmium, in mineral fertilisers.

The Laboratory’s current suite of tests covers nutrients such as nitrogen, phosphorous, potassium and sulphur and minerals such as magnesium and sodium in mineral fertilisers. A new ICP OES method for water-soluble trace elements (K, Mg, Na, P and S) was in use for 2019. New methods of analysis are needed for cadmium and other contaminants in both mineral and organic fertilisers and in products such as soil improvers and growing media. A new ICP/MS method of analysis has been developed for cadmium in fertilisers and this will be validated in 2020 and possibly extended to include other heavy metals such as arsenic, lead and mercury.

The Laboratory has also been asked to test for a number of environmentally friendly fertiliser additives such as urease and nitrification inhibitors. These products have the potential to reduce emissions of greenhouse gases (ammonia and nitrogen dioxide) and are increasingly being added to fertilisers to help agriculture to meet current and future emissions commitments without affecting production. However, there is a question over the continued efficacy of these products during storage and there is a need to be able to monitor the levels present in fertilisers on the market.

Liming materials are monitored for particle size, total neutralising value (TNV) and moisture content. This testing is particularly important when new limestone quarries are opened.

Where limestone samples submitted for new licence applications are to be evaluated under EU legislation, the fineness of the liming materials has to be determined using a wet sieving procedure and also for these samples total calcium, total magnesium and TNV expressed as CaO values have to be determined.

In 2019, two samples of sugar factory lime were received. These were samples which remained in old factories when the production of sugar ceased. Special sample preparation procedures needed to be introduced to prepare these samples for analysis. Sugar lime is not homogenous and therefore particle size analysis was not required, but TNV and calcium testing was carried out.

Food and Feed Safety - New Methods Developed

Test Method	Analytical Technique	No. of Analytes
Trace elements in inorganic feed matrices	ICP/MS	5
Steroids in urine method extended to include Stanazolol and Zearalanone	LCMS/MS	2
NSAIDs in milk method extended to included Ibuprofen and 4-Methylaminoantipyrine	LCMS/MS	2
Aflatoxin M1 in infant formula	HPLC	1
Water-soluble trace elements in fertilisers	ICP/OES	5
Total		15

STRATEGIC GOAL 1—FOOD AND FEED SAFETY

National Reference Laboratory Responsibilities

Under the Official Controls Regulation (EU) 625/2017, the State Laboratory is a designated National Reference Laboratory (NRL) 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;
- halogenated persistent organic pollutants (POPs) in food and feed;
- mycotoxins and plant toxins in animal feed and food of animal origin; and
- heavy metals and nitrogenous compounds in feed.

The requirements applicable to NRLs under the new regulation are more demanding in terms of infrastructure, equipment and staffing, in particular where they have an oversight role in relation to official laboratories carrying out screening analyses. As the NRL for steroids, the State Laboratory oversees three screening laboratories, the Irish Equine Centre, the Agri-Food and Biosciences Institute (AFBI) and FERA Science in the UK, who carry out analyses under contract to DAFM.

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, and where necessary provide technical assistance and advice to the official laboratories and DAFM as the Competent Authority.

During 2019, the Laboratory provided technical advice to the DAFM Veterinary Medicines Unit in relation to the formulation of new EU legislation in the area of veterinary drug residues in food of animal origin. Advice was also provided on technical aspects of the procurement of outsourced testing services.

Staff from the State Laboratory also developed an advisory document on the interpretation of positive results for natural steroids. This will help DAFM staff responsible for interpreting results and clarify what actions should be taken when food of animal origin samples are found to contain endogenous steroids. The action to be taken will depend on the level/identity of the steroid found and the age/sex of the animal in question.

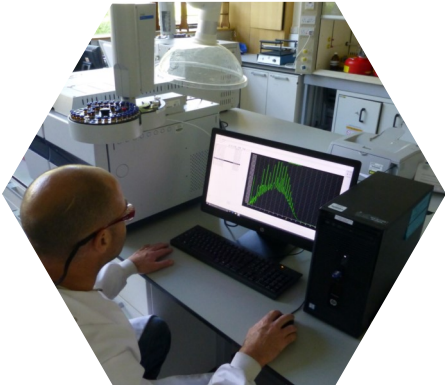
Food and Feed Safety - Numbers of Samples Tested

Category of Sample	No. of Samples	No. of Analytes Tested For
Veterinary Residues in Food	2,956	16,781
Animal Feedingstuffs	816	5,764
Dioxins in Feed and Food	644	15,201
Mycotoxins in Feed and Food	562	2,860
Nitrate in Vegetables	66	66
Fertilisers / Liming Materials	270	861
THC in Hemp	20	40
Totals	5,334	41,573

STRATEGIC GOAL 2

Support Revenue Collection and Fraud Prevention

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.



STRATEGIC GOAL 2—REVENUE COLLECTION

Customs Samples

The number of samples submitted in the Customs area increased by 11% in 2019 with a 32% increase in the number of analytes tested. All traded goods such as chemicals, foods, medicaments and plastics 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 a high level of expertise in this area, which enables them to advise Revenue on tariff classification of samples that require chemical analysis to support classification decisions.

An important aspect of this 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. In 2019, tariff classification advice was provided for 227 samples, a 10% increase on the previous year.

A member of staff of the State Laboratory attended a technical meeting of the Customs Laboratories European Network (CLEN) in the Netherlands on handheld drug detection devices. This will enable the Laboratory to support Revenue’s Detection Technologies Unit to procure suitable hand-held analysers to be used by Customs Officers at ports and airports to identify illegal substances in a safe, non-destructive manner.

The decision of the UK to leave the EU will have significant implications for the work of the Laboratory if the UK decides to leave the single market and the EU customs union, as seems likely. Due to the volume of trade between Ireland and the UK, this would result in a

large increase in the number of tariff classification opinions requested by Revenue.

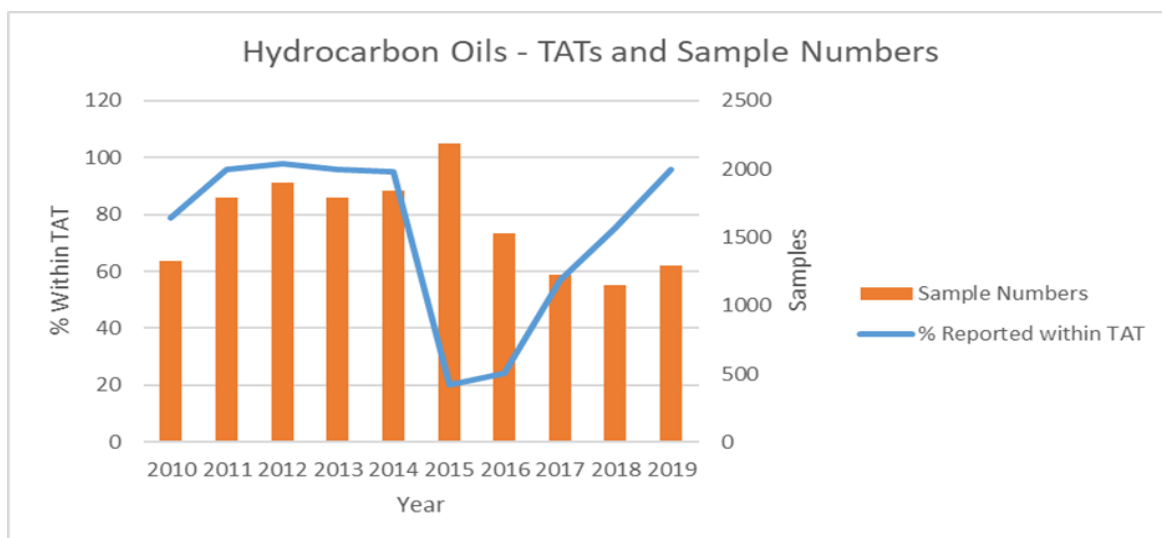
The Laboratory also supported a number of divisions of the Department of Business, Enterprise and Innovation (DBEI) as follows:

Technical advice was provided to the Inward Investment division on the processing of five applications for suspension of Customs duty. This involved liaising with applicants for duty suspensions and deputising for DBEI staff at relevant EU meetings. Four applications were processed successfully.

Scientific and technical information in relation to the fibre composition of textile products was reviewed for the Competition and Consumer Policy section and State Laboratory staff provided representation for DBEI at EU textile labelling expert group meetings.

Technical support is provided on request to the Trade Licensing and Control Unit, in relation to applications for export licences, or claims for exemptions from licencing requirements in respect of exports of sensitive goods.

In 2019, the State Laboratory entered into a Service Level Agreement with the Department of Foreign Affairs and Trade (DFAT), to provide technical advice on request, in relation to the Chemical Weapons Convention (CWC). The Laboratory also engaged in a capacity and capability review of the CWC, undertaken by DFAT during 2019 and involving many other relevant agencies and departments, to enhance Ireland’s national capacity and responsiveness in this area.



STRATEGIC GOAL 2—REVENUE COLLECTION

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. The equipment replacement programme continued during 2019 with the purchase of two automated oil distillation units, to replace obsolete equipment.

Mineral Oil Testing

The State Laboratory analyses samples of fuel seized by Revenue officials for the presence/absence of oil markers and provides analytical evidence and expert advice to facilitate court prosecutions. 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. There were many farmers and others fined for the illegal use of green diesel during 2019. This included two airports that were fined a total of €34,000 for the use of green diesel in airport vehicles.

Another 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 as fuel laundering poses a serious threat to the Exchequer, to legitimate trade and, because of the processes used in laundering, to the environment.

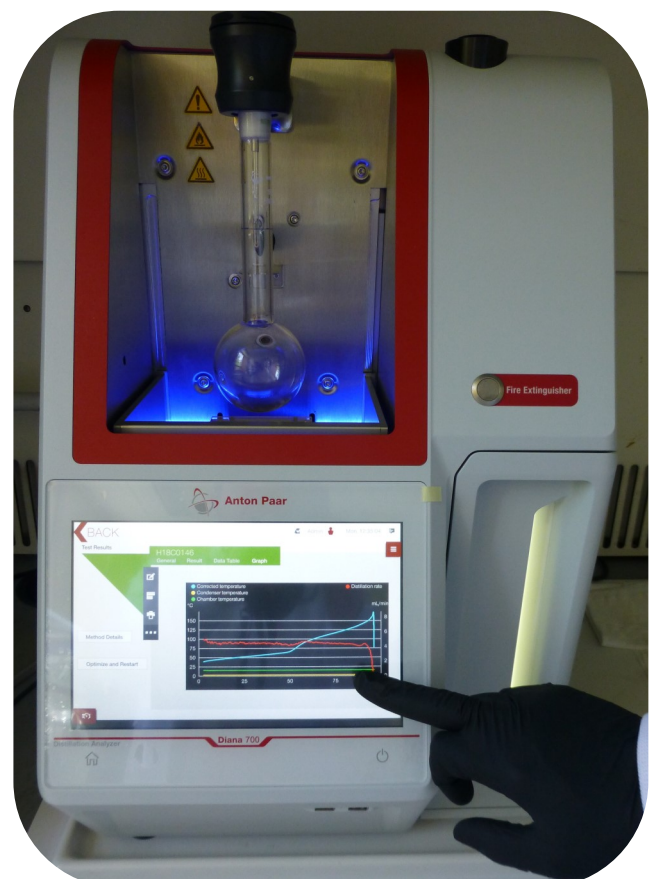
There were no fuel-laundering plants detected by Revenue in 2019 but there was a significant increase in the number of sludge samples (illegally dumped and toxic fuel laundered waste) submitted for analysis, which suggests this activity is still taking place.

Revenue reported 846 marked fuel oil detections in 2019 and a total of 99,895 litres of illicit fuel seized. This included 24 commercial seizures and 222 vehicle seizures in relation to marked fuel oil. This resulted in a 13% increase in the number of fuel oil samples submitted to the State Laboratory for analysis, including 126 sludge samples. Agreed turnaround time targets were achieved throughout 2019 and 44 samples, identified as priority and requiring urgent analysis, were analysed on the day of receipt.

Revenue anticipates that there will be an increase in the

number of 'designer fuels' samples submitted for analysis in the future. These are fraudulent, non-standard fuels, which may not show a marker but have been stretched or otherwise altered. Designer fuels are composed mostly of mineral oil and a relatively small amount of ester compound. Often, the mineral oil component is a mix of base oil and gas oil. These fuels show physical properties very similar to gas oil, which makes them difficult to detect with the official methods. Advice was given to the Customs Investigation Unit on three suspected designer fuels samples in 2019 and the State Laboratory hopes to develop new methods of analysis that will help to identify such products and the likely processes used to produce them during 2020.

Preparation for and attendance at Court cases can take a significant amount of laboratory staff time. Four staff were required to attend and give evidence at one court case May 2019. Court statements are provided for all prosecution samples and certificates of analysis are provided for prosecution samples and 792 court statements were provided in 2019.



STRATEGIC GOAL 2—REVENUE COLLECTION

Revenue Collection and Fraud Prevention - Numbers of Samples Tested		
Category of Sample	No. of Samples	No. of Analytes Tested For
Customs	237	124
Excise - Mineral Oils	1,295	8,204
Excise - Alcoholic Beverages	454	2,115
FSAI – Fermented Teas	30	30
Total	2,016	10,473

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.

Revenue officers target the supply and sale of illegal and counterfeit alcohol. Illicit trade in alcohol occurs through smuggling from countries with lower excise tax rates, illegally diverting untaxed alcohol onto the market, or the production of counterfeit alcohol. Vodka is the most commonly counterfeited alcohol and often contains high quantities of poisonous chemicals such as methanol and isopropyl alcohol.

The State Laboratory assists Revenue to determine the excise duty payable on alcohol-containing products, monitor compliance and combat excise duty fraud and the production and distribution of counterfeit spirits. In 2019, Revenue saw an increase in the number of larger seizures of illicit alcohol at the main ports. This is as a result of increased cooperation and intelligence sharing between Ireland and other EU Member States. A total of 543,194 litres of alcohol with an estimated value of €3.3 million was seized during 2019. The number of prosecution samples submitted to the Laboratory for analysis increased by 37% as a result and 33 court statements were issued.

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.

Revenue also works in partnership with the Department of Agriculture, Food and the Marine (DAFM) and the Food Safety Authority of Ireland (FSAI) on the Geographical Indication Scheme for Irish Whiskey and Irish Poteen. Geographical indication (GI) confers a type of intellectual property protection on a product, which the European Commission seeks to protect in International trade agreements. On 29 January 2016 the European Commission agreed to include Irish Whiskey and Irish Poteen as products to be protected by GI status. This means that only whiskey and poteen produced on the island of Ireland, and manufactured in accordance with the strict technical specifications agreed by DAFM and the European Commission, can be labelled and sold as Irish Whiskey and Irish Poteen.

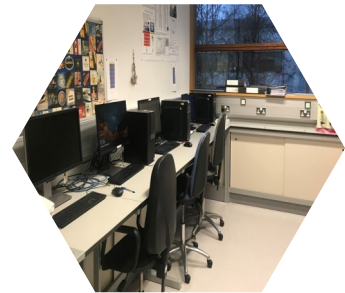
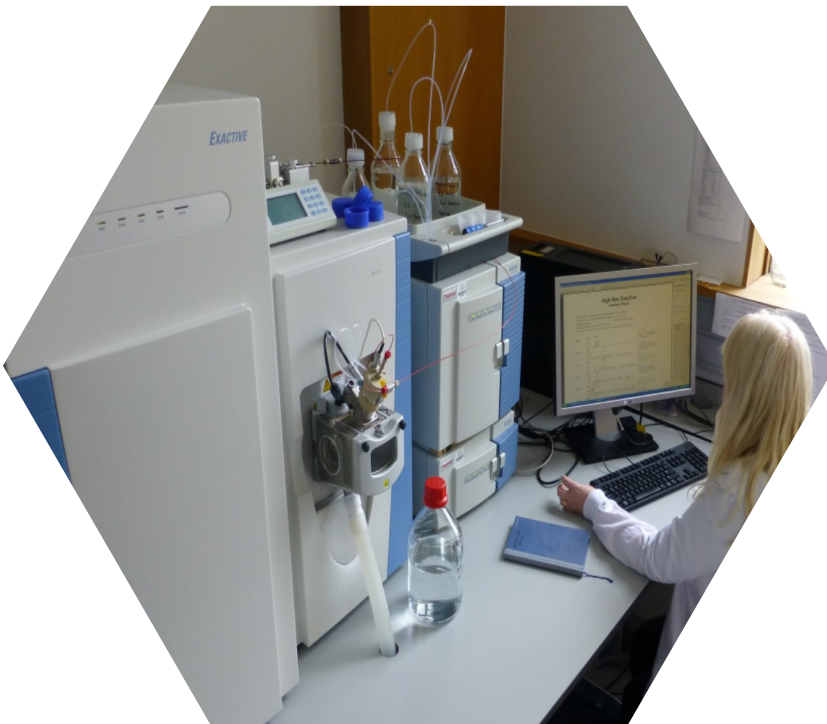
An EU Audit of the Irish GI Verification Programme for Irish Whiskey and Poteen took place in September 2019 and, subsequent to this, the State Laboratory signed a Service Level Agreement with DAFM, as the controlling authority, to provide an analytical testing service to support GI authentication of alcoholic spirits from 2020 onwards.

The State Laboratory also provided support to the FSAI by testing 30 fermented tea samples (Kombucha) for alcohol content. The FSAI were concerned about the alcohol levels of some of these products on the market and the results provided supported their investigations.

STRATEGIC GOAL 3

Provide a Forensic Toxicology Service to the State

The State Laboratory provides a forensic toxicology service to assist Coroners and the State Pathologist to investigate the causes of unexpected death 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. Staff attend and give evidence on their findings in legal proceedings and Coroners' inquests as required.



STRATEGIC GOAL 3— FORENSIC TOXICOLOGY

Forensic Toxicology Service

A constant challenge in post-mortem toxicology is the balance between satisfying the clients' demand for a sufficiently complex and timely service whilst ensuring the scope of testing adequately reflects the current drug market. According to the latest drug-related death figures from the Health Research Board, 376 people died in 2017 from overdose (poisoning deaths) and cocktails of drugs contribute to three in five poisoning deaths. There was an increase of cocaine poisoning deaths, but alcohol continues to be the main drug implicated in deaths, alone or with other drugs. Prescription drugs were implicated in two in every three poisoning deaths, of which benzodiazepines were the most common prescription drug group, implicated in 139 individual poisoning deaths.

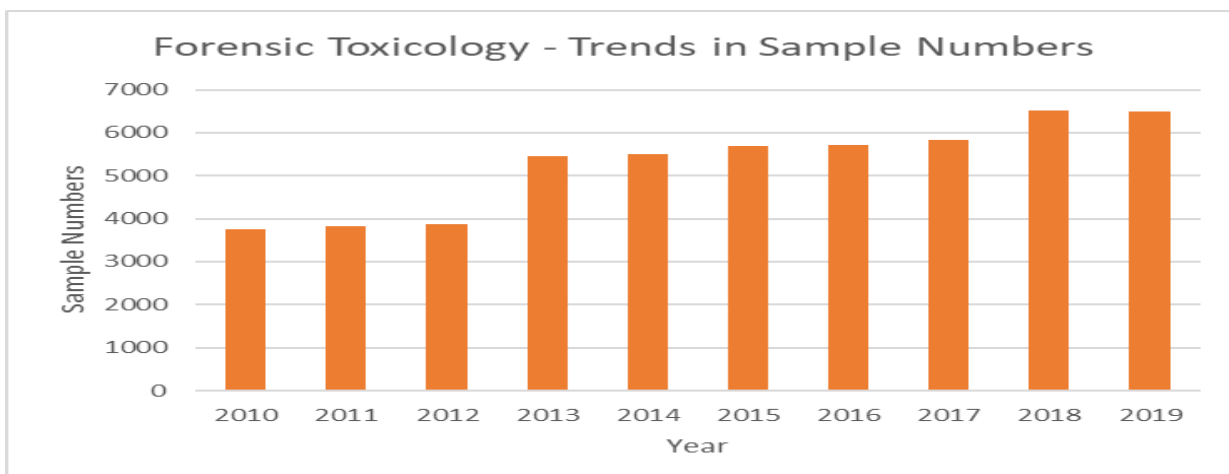
State Laboratory staff are pro-active about using their wide network of contacts to keep abreast of the latest drugs of abuse in circulation and where possible they extend the scope of the methods of analysis to include these new compounds as soon as reference standards become available. The Laboratory is also represented on the Irish national early warning system, which is instrumental in identifying new drugs, monitoring trends and making recommendations that ultimately support national harm reduction initiatives.

All post-mortem samples nationwide are submitted to the State Laboratory for both screening and confirmatory analysis and the Laboratory continues to streamline and expand the service provided to all Coroners. During 2019, the Laboratory developed six additional tests to detect prescribed drugs and drugs of abuse in post-mortem

samples, which means that for 2020, all samples submitted will be screened for 169 different drugs. Where a drug is detected during a screening analysis, the level of substance present is confirmed and quantified in a separate analysis. Additional optimisation work was carried out on the LCMS/MS confirmatory method to improve the accuracy of quantitative information provided for seven drugs.

Novel psychoactive substances (NPS), more commonly known as designer drugs, pose a particular analytical challenge because of the rapidly evolving nature of this drug market. Traditionally samples are screened for a defined cohort of prescribed and illicit drugs but now new drug products are easy to access online, often have very similar chemical structures and can be highly toxic in small amounts. Designer drugs are generally 'invisible' in traditional toxicology screens and are not available in commercially purchased databases.

The State Laboratory has developed and implemented an analytical strategy, using high resolution mass spectrometry (HRLCMS), that allows post mortem toxicology samples to be screened for previously 'invisible' designer drugs outside the laboratory's traditional defined scope of testing. This novel analytical approach is now in routine use with suspect samples being screened for all national and European NPS alerts. At the end of 2019, 33 new drugs were added to this database bringing the total number to 250. This approach also allows for retrospective analysis of data without physical sample reanalysis, which can assist the Coroners to solve cause of death investigations that previously could not have been satisfactorily concluded.



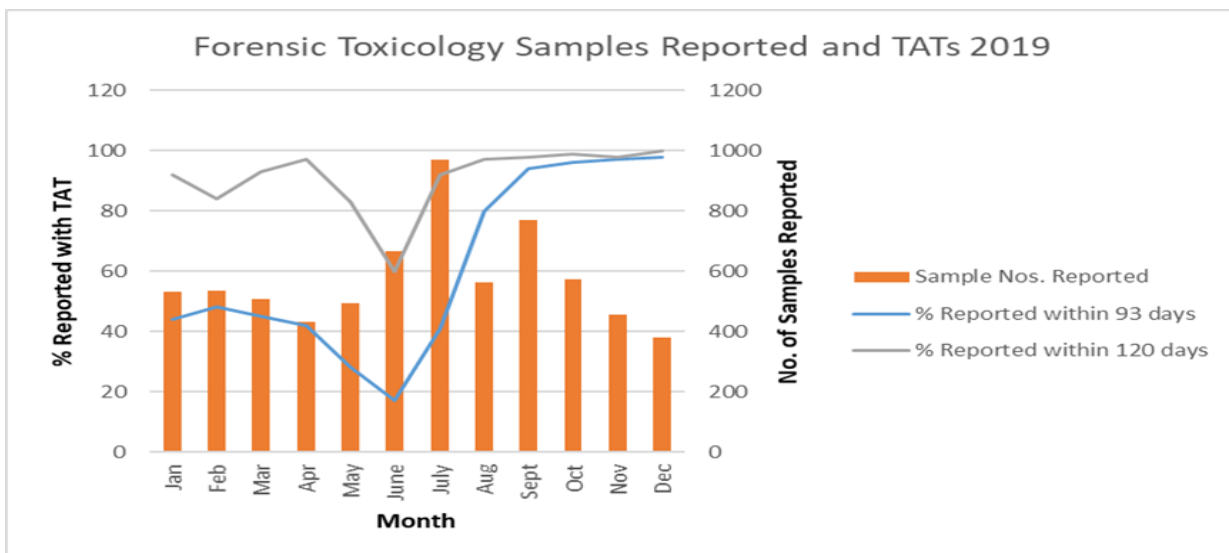
STRATEGIC GOAL 3— FORENSIC TOXICOLOGY

The main challenge facing the Laboratory for 2019 was the large backlog of ~1500 samples carried over from the previous year due to an unexpected 12% increase in 2018. Sample numbers stabilised in 2019 and additional staff and equipment resources were assigned to this work. This along with the successful introduction of new, more efficient data-processing software and a concerted effort by all staff involved, meant that the Laboratory could clear the backlog of samples by August 2019. The Laboratory met its turnaround target of 90% of samples being reported within 93 days from September onwards as shown in the following graph.

Genetic Testing

Retention of post-mortem samples for Genetics Testing

Most samples are disposed of after an agreed retention period has elapsed, currently a minimum of 18 months from the date of reporting. However, the State Laboratory facilitates the retention and return of post-mortem samples in respect of familial heart screening, cardiac risk in the young and genetic autopsy to detect inherited heart conditions in other family members. This facility is provided as part of the Laboratory's sample retention protocol and indefinite storage of frozen samples is available to Coroners on request. The samples are returned to a designated laboratory for DNA extraction and genetic testing. The Laboratory currently has samples stored indefinitely that are associated with approximately 200 cases.



STRATEGIC GOAL 3— FORENSIC TOXICOLOGY

Forensic Toxicology Service - Numbers of Samples Tested

Category of Sample	No. of Samples	No. of Analytes Tested
Coroners	6,043	536,121
State Pathologist	431	32,899
Criminal Cases	11	1,391
Total	6,485	570,411

Forensic Toxicology Service - New Methods Developed

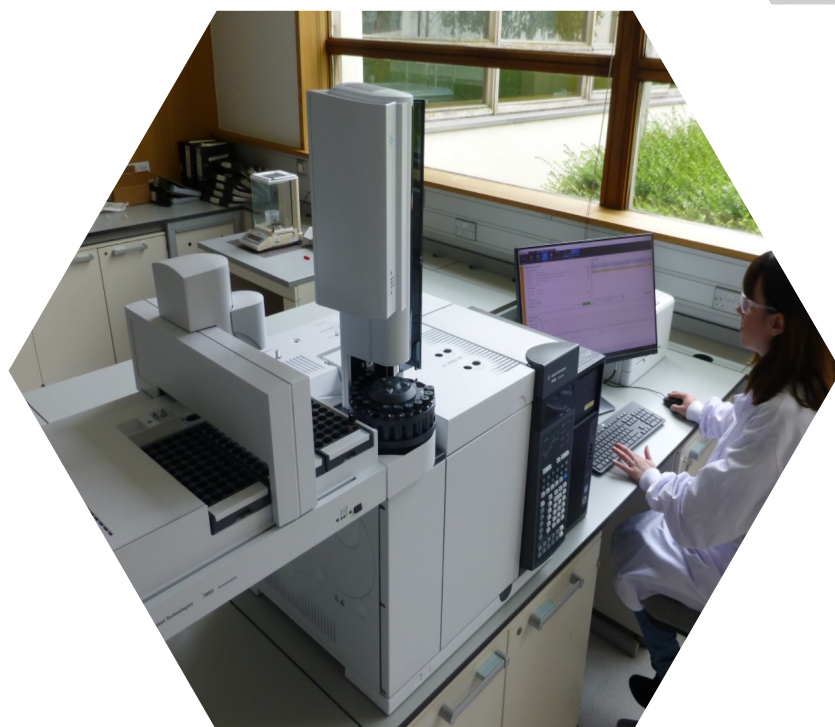
Test Method	Analytical Technique	No. of Analytes
Screening method for drugs in urine extended to include additional drugs	HRLC/MS/MS	6
Screening method for drugs in blood extended to include additional drugs	HRLC/MS/MS	6
Confirmatory method for drugs in blood extended to include additional drugs quantitatively	LC/MS/MS	7
Total		19



STRATEGIC GOAL 4

Support Public Health and Environment Protection Initiatives

The State Laboratory assists the Health Products Regulatory Authority (HPRA) to control the use of unlicensed medicines by analysing seized pharmaceutical and herbal products for the presence of pharmaceutically active compounds and scientific staff provide expert testimony in subsequent court prosecutions.



STRATEGIC GOAL 4—PUBLIC HEALTH

Analysis of Pharmaceutical Products

The State Laboratory assists the Health Products Regulatory Authority (HPRA) to control the use of falsified and illegal medicines by analysing seized pharmaceutical and herbal products for the presence of pharmaceutically active compounds. Many of these products are sold via illicit online suppliers. State Laboratory scientific staff provide expert testimony in court prosecutions, which are taken where the HPRA considers that there is a significant risk to public health or where there are persistent non-compliances. Staff prepared for four court cases in 2019, but only one case required staff to give evidence.

Throughout 2019, the HPRA continued to raise awareness of the potentially serious side effects and health risks of non-medical use of anabolic steroids via a public information campaign. This was developed in light of increased seizures in recent years of anabolic steroids being used for body enhancement and a significant lack of awareness of the serious health complications posed by these products.

The samples submitted to the State Laboratory for testing in 2019 were found to contain a wide range of anabolic steroids, sedatives, analgesics and erectile dysfunction drugs. Fourteen new tests were developed and seven of these were accredited under flexible scope, including doxepin, escitalopram, yohimbine, diclazepam, etizolam, ostarine and oxandrolone.

In September 2019, there was a recall of a heartburn medicine amid concerns that it could contain traces of a cancer-causing chemical. The HPRA issued a recall notice for ranitidine-containing medicines, after reports that nitrosamine impurities had been identified in batches of ranitidine manufactured in India. The State Laboratory developed a LCMS/MS method to quantify N-nitrosodimethylamine (NDMA), which is classified as a possible carcinogen, and subsequently seven samples of ranitidine products, which were available on the Irish marketplace, were tested for NDMA.

The State Laboratory provides a testing service to the FSAI for products sold as dietary supplements that could contain pharmaceutically active ingredients. A new LCMS/MS method was developed to test for eight stimulants and weight loss drugs and this was used to test 11 samples of botanical dietary supplements that had been submitted by the FSAI for testing in December 2018.

The Laboratory also supported the FSAI's involvement in OPSON VIII, an operation in which ten EU Member States took part in an action led by the UK targeting the sale of 2,4-dinitrophenol (DNP), a toxic chemical which is sold as a fat burner (predominantly online). Consumption of DNP can have severe consequences for the health of consumers and has proven fatal in a number of instances. One sample of a food supplement, seized by the FSAI as part of this operation, was tested for DNP.

Public Health and Heritage Protection - Numbers of Samples Tested

Category of Sample	No. of Samples	No. of Analytes Tested For
Medicinal Products	60	88
Food Supplements	1	8
Tobacco Products/E-Liquids	20	44
Heritage Protection	4	4
Total	85	144

STRATEGIC GOAL 4—PUBLIC HEALTH

Tobacco Products Analysis

The State Laboratory has been designated by the Department of Health as the testing laboratory for Ireland, for the purposes of carrying out testing on tobacco products as set out in the European Union (Manufacture, Presentation and Sale of Tobacco and Related Products) Regulations 2016.



During 2019, the Laboratory procured the instrumentation required for this analysis and, with the support of the Office of Public Works, upgraded one of its laboratories to provide the necessary controlled temperature and humidity environment required for the correct operation of a smoking machine. Once the

tobacco testing room has been commissioned and validated, work will commence on developing the required methods of analysis for tar, nicotine and carbon monoxide in early 2020 and testing of cigarettes will commence before the end of the year.

The HSE is the competent authority for the enforcement of the regulation and it is also the market surveillance authority for e-cigarettes and refill containers. It has asked the State Laboratory to provide an analytical service in relation to testing these products for nicotine, propylene glycol and glycerol content and suitable methods of analysis were developed during 2019. New methods for illegal additives such as caffeine and vitamin E, which have been linked to deaths in the United States, will be developed in 2020.

Heritage Protection

The State Laboratory provides scientific assistance to the Office of Public Works and a variety of other bodies responsible for the conservation of Ireland’s heritage.

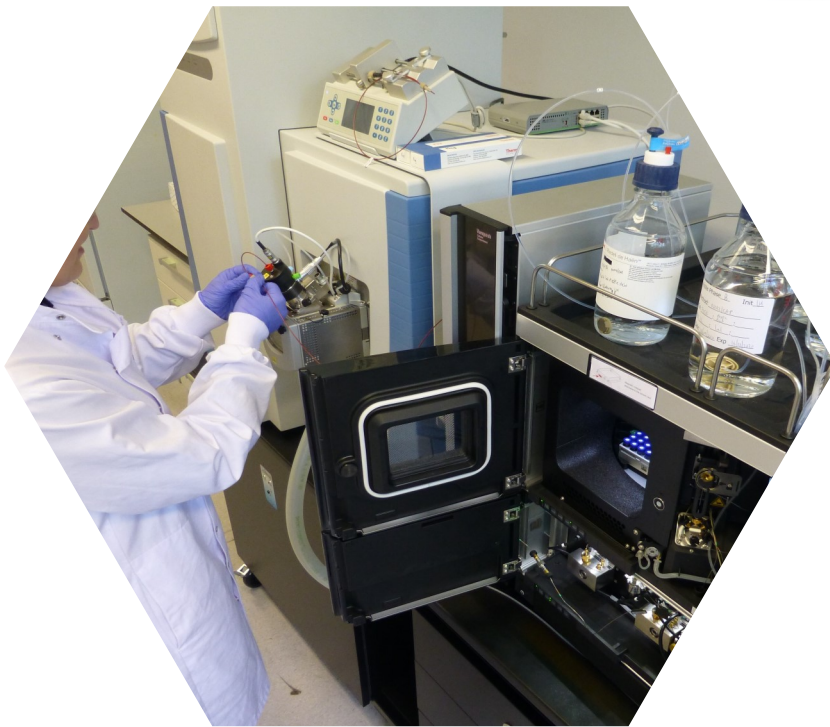
In 2019, the State Laboratory tested samples of wood for moisture content for the OPW in connection with the restoration of decorative timbers in Leinster House.

Public Health and Heritage Protection - New Methods Developed		
Test Method	Analytical Technique	No. of Analytes
Drugs in medicinal products	LCMS/MS	3
Drugs in medicinal products	QTOF LCMS	4
Steroids and other drugs in medicinal products	LCMS/MS	7
NDMA in ranitidine containing medicines	HRLCMS	1
Weight loss stimulants in botanical food supplements	LCMS/MS	8
Nicotine, propylene glycol and glycerol in e-liquids	GC-FID	3
Total		26

STRATEGIC GOAL 5

Provide a Centralised Veterinary Toxicology Service

The State Laboratory provides a toxicant testing service to DAFM and the National Parks and Wildlife Service (NPWS) to assist investigations into suspected poisonings of birds of prey. These include the re-introduced golden eagles, white tailed sea eagles and red kites and other highly vulnerable species (peregrine falcons, buzzards, kestrels and owls) and support is also provided for investigations into cases of suspected farm or companion animal poisonings.



STRATEGIC GOAL 5—VET TOXICOLOGY

Veterinary Toxicology Service

The RAPTOR (Recording and Addressing Persecution and Threats to Our Raptors) protocol is a collaborative approach between the National Parks and Wildlife Service (NPWS), DAFM Regional Veterinary Laboratories, and the State Laboratory, to systematically determine the extent to which anthropogenic non-habitat related impacts (for example poisoning, persecution, disturbance, collisions, etc.) are threats to Ireland's native birds of prey.

The State Laboratory provides a toxicant testing service under this protocol to DAFM and the NPWS, to assist investigations into suspected poisonings of birds of prey. These include the re-introduced golden eagles, white tailed sea eagles and red kites and other highly vulnerable species (peregrine falcons, buzzards, kestrels and owls). Support is also provided to DAFM for investigations into cases of suspected farm or companion animal poisonings.

There was a 13% increase in the number of samples submitted in 2019 compared to 2018. As in previous years, many of the samples taken from dead birds were found to contain a range of rodenticides such as brodifacoum, flocoumafen, difenacoum and bromadiolone. While the use of second generation anticoagulant rodenticides is important for the effective control of rodents on farms and other food premises, these products need to be used correctly to prevent other wildlife species being accidentally exposed to these products.

While poisoning with rodenticides can be accidental, in eight cases submitted for analysis in 2019, the banned and highly toxic pesticide carbofuran was detected and in 13 other cases, the presence of alphachloralose and betachloralose, which are also illegal, was detected.

Carbofuran, despite being banned since 2008, continues to be one of the primary poisons detected annually. The frequency with which this lethal poison is used and its widespread use across Ireland in wildlife crime, is of significant concern. In one case where a hen harrier was found to have died as a result of poisoning from carbofuran. evidence gathered at the scene included meat bait which had been treated with this toxic substance.

Of the 24 bird poisoning incidents in 2019, seven involved common buzzards, seven red kites, five peregrine falcons, two hen harriers, one kestrel, one barn owl and one long-eared owl. One of the cases involved a male and female peregrine falcon. At the outset of the breeding season these were found dead at a site in County Wexford along with two pigeon carcasses that had been laced with carbofuran. Toxicological tests on the peregrines confirmed that they had died from carbofuran poisoning by eating the poison-laden pigeons that had been deliberately placed near the nest site. Two other samples of suspected poisoned bait were also submitted for analysis during the year and were found to contain alphachloralose and betachloralose, and methiocarb (the active ingredient in slug pellets).

Veterinary Products

The Laboratory analyses veterinary medicinal products seized for enforcement purposes by DAFM Investigations Division. Sample numbers were similar to the previous year and the majority were tested for steroids, corticosteroids or antibiotics. There were six new methods of analysis developed, five of which were accredited under flexible scope. In May, four samples of creams for treatment of sarcoids in horses were received. These were bespoke preparations and required quantification of fluorouracil (a chemotherapy drug), thiouracil, arsenic and mercury.

STRATEGIC GOAL 5—VET TOXICOLOGY

Veterinary Toxicology Service - Numbers of Samples Tested

Category of Sample	No. of Samples	No. of Analytes Tested For
Toxicants in post mortem samples	224	2,428
Veterinary Medicinal Products	90	93
Total	314	2,521

Veterinary Toxicology Service - New Methods Developed

Test Method	Analytical Technique	No. of Analytes
Drugs in veterinary products	HPLC/PDA	3
Drugs in veterinary products	QTOF LCMS	2
Oxytocin in veterinary product	LCMS/MS	1
Total		6

ADMINISTRATION

Administration

In 2019, there continued to be an emphasis on recruitment and filling vacancies due to retirements, resignations and other staff movements that occurred during the year.

Staffing

At the end of December 2019, the Laboratory had 100 staff members and 98.3 Whole Time Equivalent (WTE) staff. This compares with 93 WTEs at the end of 2018.

Eight staff members left the Laboratory during 2019. Two Senior Laboratory Analysts retired - Angela Cunningham and Sheevaun Cody. Three staff members moved to other Government Departments - the ICT Manager, the HR Manager on promotion to Assistant Principal and a Clerical Officer via a transfer panel. Three staff resigned - a Laboratory Analyst, a Clerical Officer and a Laboratory Attendant.

Twelve staff joined the Laboratory during 2019. An ICT Manager (AP), a Health & Safety and Facilities Liaison Manager and three Laboratory Analysts were recruited following open competitions undertaken by the Public Appointments Service (PAS). Two Laboratory Attendants were recruited from an open competition undertaken by the State Laboratory with the assistance of a recruitment agency. One staff member returned from career break and two staff, an Administrative Officer and an Executive Officer were appointed on secondment. Two Clerical Officers joined the Laboratory from mobility and existing PAS panels respectively.

Sick Leave

In 2019, the Laboratory's Lost Time Rate was 3.5% down 0.1% from 2018. The average working days lost per full time employee was 8.0 days.

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.

The numbers of males and females in each grade at the end of 2019 is shown in the adjacent table.

Gender Breakdown in The State Laboratory		
Grade	Female	Male
State Chemist	1	0
Principal Chemist	2	0
Senior Chemist	5	2
Assistant Principal Officer	1	1
Technical Information Manager	0	1
Chemist Grade II	8	4
Chemist	14	11
Higher Executive Officer	1	2
Administrative Officer	1	0
Senior Laboratory Analyst	5	4
Laboratory Analyst	14	9
Executive Officer	2	2
Clerical Officer	4	0
Head Laboratory Attendant	0	1
Storekeeper	0	1
Laboratory Attendant	2	2
Total	60	40

Family Friendly Policies	
Scheme	% of staff availing of scheme in 2019
Work-sharing	13%
Parental Leave	13%
Career Breaks	3%
Shorter Working Year	13%

ADMINISTRATION

Civil Service Employee Engagement Survey (CSEES)

Following the publication of the results of the 2017 survey, the State Chemist met with all staff on a sectional basis (in the absence of section management) to get their feedback on the outcome of the survey and seek practical suggestions that would improve employee experience and engagement. Separate meetings were held with management grades.

The Senior Management Team then discussed the suggestions for improvement received and developed an action plan to address the lowest scoring themes.

The aim of this action plan was to foster staff engagement and encourage high levels of performance and internal communication, which are key strategic drivers for the Laboratory.

A summary of the themes included in the 2017 Action Plan, along with the Outcomes and Target Scores to be achieved in the next employee engagement survey is provided in the table below.

During 2019, the Senior Management Team reviewed the Action Plan quarterly and an update was provided to staff. The State Chemist also attended section meetings in September to seek further staff feedback. Good progress was made with all agreed actions by the end of 2019.

Theme / Improvement Area	2017 CSEES Score % (2015 CSEES Score %)	Outcome	2020 CSEES Target Score
1. Involvement Climate	40% (35%)	<ul style="list-style-type: none"> Staff better informed on the work of other sections Staff have more say in decisions that affect them Improved communications between staff and management 	50%
2. Organisational Support	52% (46%)	<ul style="list-style-type: none"> Staff opinions are valued Staff welfare supported The Health & Safety of staff is seen as a priority for the State Lab 	58%
3. Innovative Climate	54% (49%)	<ul style="list-style-type: none"> Management are open to new ideas and suggestions Innovation is encouraged 	60%
4. Job Demands	54% (52%)	<ul style="list-style-type: none"> Staff given enough time to do what is expected of them Work is prioritised to match available resources 	58%
5. Career Development & Mobility	54% (50%)	<ul style="list-style-type: none"> All staff receive the training they need to do their job and are provided with career development opportunities 	58%
6. Performance Standards	55% (48%)	<ul style="list-style-type: none"> Poor performance is addressed effectively Senior managers held accountable for achieving results 	60%
7. Public Perception of the Civil Service	40% (29%)	<ul style="list-style-type: none"> Staff have a greater understanding of the benefits of their work to the public 	45%

ADMINISTRATION

Wellness at Work

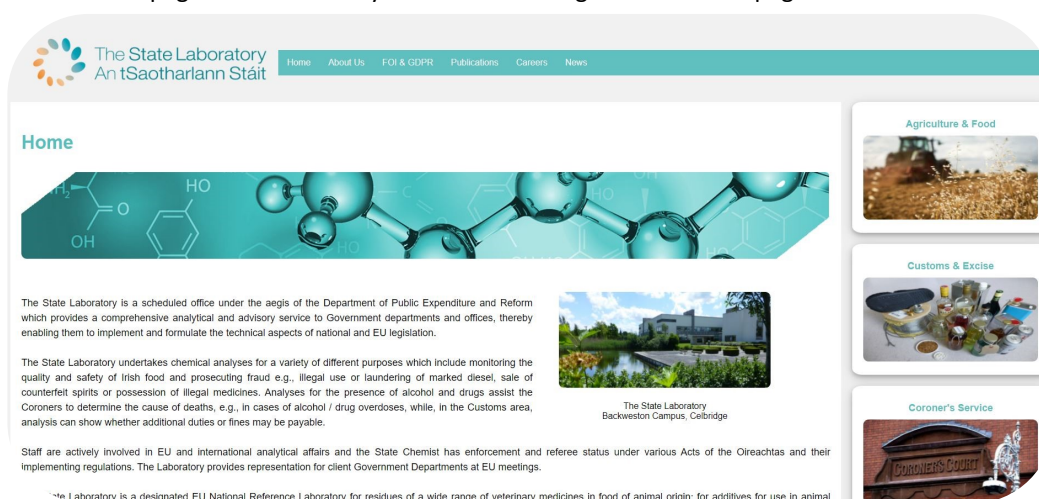
In line with its strategy to promote a positive work environment and the well-being of its staff, the State Laboratory continued its wellness at work programme in 2019. Initiatives already in place continued e.g. weekly meditation sessions and yoga classes, lunchtime walks and presentations on mental health given by the Civil Service Employee Assistance Service. The knitting club continued to produce knitted goods for various charities and the book club met monthly.

In addition, all staff were offered a personal resilience course and 33% of staff availed of this. The course will be offered again in 2020. A weekly outdoor fitness boot camp took place in the summer and autumn months. Health screening, provided by staff from the Chief Medical Officer's office, the flu vaccination and monthly in-house massage sessions were also available to all staff.



ICT Developments

In line with its strategy to optimise the delivery of services through the use of leading edge scientific technologies, good progress was made with increasing the capacity and expertise of the ICT Unit in 2019. An internal ICT Strategy meeting was held in January and a new four-year ICT Statement of Strategy for the Laboratory was developed and subsequently approved by management. A number of important ICT Projects were completed, including the implementation of offsite Disaster Recovery arrangements with Revenue, the introduction of a new email system and upgrades to servers and Active Directory. The Laboratory's website and intranet were also redesigned and refreshed by staff of the ICT Unit. Since going live in August, the Laboratory's website has had 2,272 visitors, 14% of which were returning. Of the 6,954 page views, 14% were on the Careers page, 13% were on the About Us page, 5% were on the Publications page and 4% on the FOI page. The remaining percentage was primarily on the home page and then evenly distributed among the rest of the pages.



The Laboratory's information and management system (LIMS) was upgraded to the latest version and migrated to a new server and a new SQL version at the same time. This was a sizable project and training on the updated software was provided to staff. The LIMS team also completed ~350 change requests for laboratory staff, which included a number of significant development projects.

ADMINISTRATION

Student Placement Programme

The State Laboratory continued its student placement programme in 2019. The work placements are a compulsory part of the students' four-year honours degree course and must be completed before the students begin their final year. The placements are confined to students whose degree courses are particularly relevant to the work of the Laboratory.

In 2019, students were employed from Dublin City University, Dublin Institute of Technology, Galway Mayo Institute of Technology, Limerick Institute of Technology, Technological University Dublin – Tallaght Campus, and Maynooth University. Eight students in all were placed in areas complementary to their academic discipline for a period of six months.



During their placement, students obtained experience of the work in the Animal Feedingstuffs, Contaminants, Customs & Excise, Human Toxicology, Veterinary Toxicology and IT sections of the Laboratory. In the analytical sections, students carried out routine analysis on samples of food, animal feed, fertilisers and biological fluids/tissues in line with the Laboratory's quality and safety policies and under the supervision of Senior Laboratory Analysts. In the IT section, the placement involved providing Helpdesk support, PC maintenance and repair and software upgrades for users.

Energy Use Statement

In 2019, the gross energy consumption by the State Laboratory was as follows:

• Electricity	2,565,195 kWh
• Gas	4,909,754 kWh
• Total	7,474,949 kWh

The State Laboratory had been using Total Usable Floor Area (TUFA) as the activity metric for mapping its trajectory towards the 2020 public sector energy efficiency target. This metric had been in place since 2006 and was useful in providing a reference point relative to thermal and electrical requirements of the building. However it does not accurately reflect the significant change and growth of output within the State Laboratory since 2006. This growth is reflected in the number of analytes tested annually. In 2006 112,2419 analytes were tested compared to 625,122 analytes in 2019.

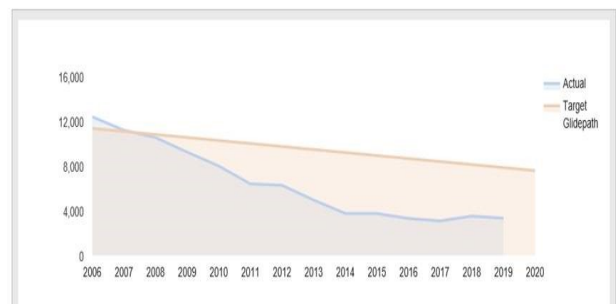
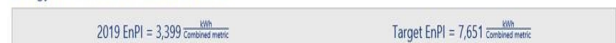
The State Laboratory submitted a proposal for generating a composite activity metric, that was more reflective of the key activities that drive energy consumption. This composite activity metric was subject to an independent methodology review and a Data Verification Audit (DVA). Minor data quality issues raised within the DVA were addressed and the composite activity metric was incorporated into the recording of the 2019 energy data within the SEAI M&R system.

Based on the new composite metric, the predicted energy performance indicator (EnPI) for 2019 is 70.2% . Electricity consumption improved by 8.9% and gas consumption was better by 1.3 % compared to 2018.

Since Baseline to 2019



Energy Performance Indicators - 2019



GOVERNANCE

Quality System / Accreditation

The quality of analytical work from the State Laboratory is enhanced by having a documented quality system in place and national and international acceptance of results of analyses requires the Laboratory to be accredited to ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories) by the Irish National Accreditation Board (INAB Reg. No. 146T). This is particularly so in the case of official control of food and feed and to ensure successful court prosecutions.

During its 2019 INAB assessment visit, the Laboratory successfully transitioned to the 2017 version of ISO 17025 standard and at the end of 2019, the Laboratory was accredited for 53 test methods covering 519 individual analytes.

Customer Satisfaction Survey

The Laboratory has always been conscious of recording the effectiveness of its service delivery to client departments and offices. The results of the 2019 Customer Satisfaction survey once again showed that the most important attribute of the service that the laboratory provides is Quality. This reflects the fact that as a regulatory laboratory, the analytical results and advice the State Laboratory provides are used to inform important decision-making and implement legislation and to support court prosecutions and Coroners inquests.

It was therefore very positive to note that 97% of clients indicated that they were very satisfied with the Quality of the service provided in 2018 and 100% of clients were either very satisfied or satisfied. The other results of the 2018 Customer Survey were as follows:

100% of clients expressed satisfaction with the range of the service provided, with the scientific advice given and with the helpfulness and flexibility of staff and

73% of clients expressed satisfaction with the timeliness of the service provided.

The response for timeliness disimproved from a very positive 97% satisfaction rating in the 2018 survey. This was mainly due to a large increase (~20%) in post-mortem samples submitted during the first six months of 2018, which resulted in a large backlog of samples building up and meant that the laboratory failed to meet agreed turnaround times for 2018. Additional staff and

equipment resources were assigned to this work in early 2019, which enabled the backlog to be cleared and the required 93-day turnaround time was met from September 2019 onwards.

Health and Safety

The State Laboratory has a legal obligation to provide a safe work environment for all its staff and visitors. Managing laboratory safety correctly and mitigating the hazards associated with working with potentially dangerous chemicals is a high priority for the Laboratory's Management Board. A Principal Chemist holds the role of Safety Officer and is supported by a fulltime Health & Safety manager, who was recruited in March 2019, and a Safety Working Group.

Two Safety Working Group meetings were held and good progress was made with implementing a comprehensive Safety Programme throughout 2019. This included updating risk assessments for all chemicals, equipment and activities, setting up and maintaining a chemical inventory with safety related information, reviewing waste streams and ongoing management of routine Health & Safety activities.

System of Internal Financial Control

The State Chemist's Statement on Internal Financial Control, which can be found at Appendix I, was submitted to the Office of the Comptroller and Auditor General along with the State Laboratory's 2018 Appropriation Account in March.

The C&AG's Office carried out their annual audit of the State Laboratory's 2018 Appropriation Account in May 2019 and one finding with a 'Low' rating was noted in relation to the number of safety incidents reported. This arose because all 'near misses' are reported as safety incidents to ensure that appropriate preventive actions are put in place.

The State Laboratory's Audit Committee met twice in 2019. Internal audits were conducted on Financial Reporting, Treasury and Revenue and Computer Controls. The System of Internal Control was also reviewed and progress on implementing corrective actions recommended in the course of previous audits was tracked.

GOVERNANCE

Financial Information

The following table summarises the State Laboratory's financial expenditure in 2019, with figures for 2018 provided for comparative purposes.

Gross Expenditure	2018 €000	2019 €000
A1. Salaries, Wages & Allowances	5,369	5,646
A2. Travel and Subsistence	37	39
A3. Training and Development & Incidental Expenses	249	288
A4. Postal & Telecommunications Services	68	49
A5. Apparatus & Chemical Equipment	2,527	3,239
A6. Office Premises Expenses	1,471	1,507
A7. Consultancy Services (Internal Audit)	21	63
Gross Total	9,742	10,831

Prompt Payments

In 2019, the Laboratory made three late payments to the value of €128.01.

Freedom of Information

The State Laboratory received one non-personal Freedom of Information request in 2019.

Protected Disclosures

No protected disclosures were received in the reporting period up to 31 December 2019.

Asset Management

As analytical chemistry continues to evolve and new technologies become available, the Laboratory invests in new instrumentation to ensure that the service it provides meets the needs of its clients and delivers on its vision of providing a world-class regulatory scientific service to the State. This has enabled the Laboratory to improve the quality and efficiency of its service whilst also meeting any new analytical challenges presented by updated legislation.

The Laboratory has an Asset Management strategy in place to donate older, less reliable or obsolete equipment to external stakeholders. In 2019, an old ICPMS instrument was dismantled and donated to an institute of technology and two nitrogen analysers were donated to a university to be used for teaching purposes. The Laboratory received excellent feedback from the recipients of these instruments, which would otherwise be disposed of as they were no longer fit for official testing purposes.



APPENDIX I

STATEMENT BY THE ACCOUNTING OFFICER ON INTERNAL FINANCIAL CONTROL

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.

Shared services

I have fulfilled my responsibilities in relation to the requirements of the service management agreement between the State Laboratory and the National Shared Service Office for the provision of payroll shared services and human resource shared services.

I rely on a letter of assurance from the Accounting Officer for the National Shared Services Office that the appropriate controls are exercised in the provision of shared services to the Laboratory.

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.
- ◆ Procedures for all key business processes have been documented.
- ◆ There are systems in place to safeguard the assets.

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.

Procurement compliance

The State Laboratory ensures that there is an appropriate focus on good practice in purchasing and that procedures are in place to ensure compliance with all relevant guidelines. The State Laboratory complied with procurement guidelines but seven contracts to the value of €1,040,544 (excluding VAT) required disclosure in my annual return in respect of circular 40/2002. Three of the contracts, to the value of €107,568 (excluding VAT) involved specialist laboratory consumables and services for which there was only one supplier. Four other contracts were not competitively procured for the following reasons:

- ◆ Two contracts to the value of €812,732 (excluding VAT) were for laboratory equipment. Article 32 of Directive 2014/24/EU was invoked because competition was absent for technical reasons.
- ◆ One contract to the value of €51,314 (excluding VAT), which was originally awarded under a competitive process, was extended beyond the original contract dates to ensure continued supply in the event of a no-deal Brexit and to avoid a substantial cost increase under a new framework agreement.

- ◆ One contract to the value of €68,930 (excluding VAT) was awarded for the implementation of a new email system to an existing ICT support company to reduce the risk to the overall ICT system.

Internal Audit and Audit Committee

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.

Risk and Control Framework

The State Laboratory has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the extent possible, to mitigate those risks.

A risk register is in place which identifies the key risks facing the laboratory and these have been identified, evaluated and graded according to their significance. The register is reviewed and updated by the Management Board on a bi-annual basis. The outcome of these assessments is used to plan and allocate resources to ensure risks are managed to an acceptable level.

The risk register details the controls and actions needed to mitigate risks and assigns responsibility for operation of controls to specific staff.

Ongoing Monitoring and Review

Formal procedures have been established for monitoring control processes and control deficiencies are communicated to those responsible for taking corrective action and to management and the Management Board, where relevant, in a timely way. I confirm that key risks and related controls have been identified and processes have been put in place to monitor the operation of those key controls and report any identified deficiencies.

Review of Effectiveness

I confirm that the State Laboratory has procedures to monitor the effectiveness of its risk management and control procedures. The department's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the internal and external auditors and the senior management within the laboratory responsible for the development and maintenance of the internal financial control framework.

Internal Financial Control Issues

No weaknesses in internal control were identified in relation to 2019 that resulted in, or may result in, a material loss.



30 March 2020

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 2019.

- ◆ Codex Alimentarius Committee on Methods of Analysis and Sampling (CCMAS) session in Budapest, Hungary
- ◆ Eurachem General Assembly , Tartu, Estonia
- ◆ Two meetings of the Eurachem Method Validation WG, Rome and Paris
- ◆ 25th Meeting of the Consultative Committee on Quantity of Material: Metrology in Chemistry (CCQM), BIPM, Paris
- ◆ CEN (European Committee for Standardization)
 - ◇ 23rd Plenary meeting of CEN/TC 327 Animal Feedingstuffs
 - ◇ Plenary meeting of CEN TC/260, Berlin
 - ◇ Meeting of CEN Technical Committee TC/327 WG4 on Heavy Metals, Trace Elements and Minerals in Animal Feed
 - ◇ Meetings of CEN Technical Committee TC/327 WG5 Natural Toxins in Animal Feed, Berlin
 - ◇ Meeting of CEN Technical Committee TC/260 WG7 Chemicals Analysis, Brussels
- ◆ Meetings of European Union Reference Laboratories (EURL) and National Reference Laboratories (NRLs) networks
 - ◇ 8th Workshop of the EURL for Feed Additives (EURL-FA), Brussels
 - ◇ EURL Workshop—Metals and Nitrogenous Compounds in feed, Copenhagen
 - ◇ Working Group on Methods of Analysis in Feeds, Brussels
 - ◇ EURL workshop— Mycotoxins and plant toxins, Wageningen, Netherlands
 - ◇ Brominated Flame Retardants (BFRs) Core working group, Wageningen, Netherlands
 - ◇ EURL meeting on POPs, Riga, Latvia
 - ◇ EURL Workshop –Pyrrolizidine Alkaloids, Netherlands
 - ◇ EURL Workshop on PFAS, Orebro, Sweden
 - ◇ Forum on Halogenated Pollutants, Berghausen, Germany
 - ◇ EU Working Group on Veterinary Residues (discussing 11188/2018 and 11987/2017), Brussels
 - ◇ EURL/NRL workshop on steroids, corticosteroids and sedatives, Wageningen, Netherlands
 - ◇ EU meeting—Revision of Regulation 152/2009, Brussels
- ◆ Two meetings of UKIAFT WG on Method Validation, London & Cambridge
- ◆ SOFT meeting San Antonio, Texas, USA
- ◆ TIAFT meeting, Birmingham
- ◆ UKIAFT meeting, Cambridge
- ◆ Club Health, Amsterdam
- ◆ One Health Annual Conference, Galway
- ◆ DIOXIN 2019, Kyoto, Japan
- ◆ FSAI Conference 2019, Dublin
- ◆ Conference on Preventing Fuel Fraud, Subsidy Abuse and Securing the Supply Chain, London
- ◆ Meeting of the Irish Mass Spec Society (IMSS), Dublin
- ◆ HSR annual Conference 2019, Dublin
- ◆ International Chemical Information Conference, Nice, France
- ◆ National Data Protection Conference, DunLaoghaire
- ◆ Information Law Conference, Dublin
- ◆ Chemical Weapons Convention, Rijswijk
- ◆ Thermo Scientific LC MS Symposium, Glasgow
- ◆ Forum on Halogenated Pollutants 2019, Raitenhaslach, Germany

Attended on behalf of Revenue and Department of Business , Enterprise and Innovation

- ◆ 35th Meeting of the Scientific Sub-Committee of the World Customs Organisation, Brussels
- ◆ 21st Customs Laboratories European Network Plenary meeting, Brussels
- ◆ Two meetings of the Economic Tariff Questions Group” (Tariff suspensions for chemical and agricultural products; Tariff suspensions for microelectronic products; Brussels
- ◆ Three meetings of the Customs Code Committee, Agri-Chemical Sector in Brussels
- ◆ EU Commission Expert Group meetings on Textiles Names and Labelling
- ◆ One Project Group meeting dealing with the Food & Chemical Chapters of HS/CN in Brussels
- ◆ Two Duty Suspension meetings, Brussels
- ◆ Clen Meeting of Participants in 2nd Ring Trial on Tobacco Products, Brussels

Conference & Seminar Presentations by State Laboratory staff

- ◆ Poster entitled “Dioxin Analysis a New Era” - IMSS conference & FSAI Science Conference
- ◆ Poster entitled “An investigation of Elevated Dioxin Levels in Ovine Livers in Ireland” - IMSS conference, FSAI Science Conference and DIOXIN2019
- ◆ Poster entitled “The State Laboratory: Mycotoxins in Animal Feeding Stuff”- FSAI Science Conference

Conferences and Workshops organised by State Laboratory staff

- ◆ Eurachem Workshop on Measurement Uncertainty

Publications by State Laboratory staff

- ◆ "H. Cantwell (ed.) Blanks in Method Validation - Supplement to Eurachem Guide The Fitness for Purpose of Analytical Methods, (1st ed. 2019). Available from <http://www.eurachem.org>"
- ◆ Helen Cantwell was part of the group whose work was published as “V. Barwick (ed.), Planning and Reporting Method Validation Studies – Supplement to Eurachem Guide on the Fitness for Purpose of Analytical Methods (2019). Available from <http://www.eurachem.org>"
- ◆ Carol Gleeson participated in the preparation of an article for Royal Society of Chemistry – “Use of UV in determination of Carbon Monoxide” in support of 2nd level Chemistry teachers and students interested in the subject at Transition Year / Leaving Cert level. The article is to go into the RSC’s ‘Spectrometry in a suitcase’ publication which will be a chemistry teacher support circulated to secondary schools.

APPENDIX III

IRISH NATIONAL ACCREDITATION BOARD ACCREDITED TESTS. SUMMARY OF SCHEDULE OF ACCREDITATION (Edition 2: 26/11/2019)*

Matrix	Measurand	Test Method	Method ID
Animal Feedstuffs	Crude Protein	EN ISO 16634-1:2008. Nitrogen content by the Dumas Principle.	LSD A032
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 Fibre	EU Commission Regulation 152/2009 Annex III (I).	LSD A024
Animal Feedstuffs	Crude Fibre	NIR Spectroscopy Screening Method.	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	Ash Insoluble in HCl	EU Commission Regulation 152/2009 Annex III (N).	LSD A034
Animal Feedstuffs	Moisture	EU Commission Regulation 152/2009 Annex III (A).	LSD A027
Animal Feedstuffs	Macro and Trace Elements (8)	IS EN 15621:2012. ICP OES with Microwave Digestion.	LSD A060
Animal Feedstuffs	Macro and Trace Elements (15)	ICPMS with microwave digestion, based of EN 17056 (2018)	LSD A067
Animal Feedstuffs	Heavy Metals (6)	ICPMS with Microwave Digestion.	LSD A062
Animal Feedstuffs	Nicarbazin	In House HPLC method with DAD, based on IS EN 15782:2009.	LSD A050
Animal Feedstuffs	Monensin, Narasin and Salinomycin	EN ISO 14183: HPLC with post column derivatisation.	LSD A051
Animal Feedstuffs	Coccidiostats (11)	In house LCMSMS Method	LSD A052
Animal Feedstuffs	Antibiotics (14)	In house method using Q Trap LC-MSMS	LSD A095
Animal Feedstuffs	Chlortetracycline	In House HPLC method with DAD	LSD A072
Animal Feedstuffs	Sulphadiazine	In House HPLC method with DAD	LSD A076
Fertilisers	Nitrogen Content	Nitrogen content by consumption by Dumas Principle. In house method based on AOAC official method 993.13.	LSD A036
Animal Feedstuffs	Iodine	In house ICPMS method based on EN: 17050 (2017)	LSD A066
Animal Feedstuffs	Theobromine	In house method using HPLC UV/PDA	LSD A077
Animal Feedstuffs	Fluoride	In house method using ion-selective electrode based on EN 16279:2012	LSD A099

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

APPENDIX III

IRISH NATIONAL ACCREDITATION BOARD ACCREDITED TESTS. SUMMARY OF SCHEDULE OF ACCREDITATION (Edition 2: 26/11/2019)*

Matrix	Measurand	Test Method	Method ID
Drugs	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 Q2 (R1), Q2B and Q6A and monographs from British, European and US Pharmacopoeia.	LSD J014
Drugs	Flexible Scope (Analyte and Range) Identification of Pharmaceutical Samples	In house QTOF LCMS method based on the requirements of Commission Decision 2002/657/EC, ICH guideline Q2 (R1), Q6A and monographs from British, European and US Pharmacopoeia.	LSD J044
Milk (Liquid & Powder and Infant Formula)	Aflatoxin M1	Based on ISO 14501:2007 method. Extraction and IA column clean-up. RP HPLC with fluorescence detection.	LSD M125
Animal Feedstuffs	Aflatoxin B1	In house method. Extraction and IA column clean-up. RP HPLC with fluorescence detection.	LSD M124
Liver	Ochratoxin A	In house method using IA column cleanup and RP HPLC with fluorescence detection.	LSD M126
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 M252
Animal Feedstuffs	Mycotoxins (11)	In house Multi Analyte LCMSMS method	LSD M138
Fruit Juices	Patulin	In house HPLC UV method	LSD M067
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
Liquid Fuels	Accutrace S10 Fuel Marker (Gasoil)	In house GCMS method	LSD H033
Liquid Fuels	Accutrace S10 Fuel Marker in Hydrocarbon Oil	In house GCMS method	LSD H046
Blood, Urine and Vitreous	Ethanol	In house method. Determination by internal standard quantitation using Headspace GC with FID.	LSD T003
Animal Urine	Flexible Scope (Matrices, Residues and Ranges) Steroids (18)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V031
Animal Serum	Flexible Scope (Matrices, Residues and Ranges) Steroids (14)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V046
Poultry Liver	Flexible Scope (Matrices, Residues and Ranges) Steroids (11)	In house method by LCMSMS requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V061
Animal Serum	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
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

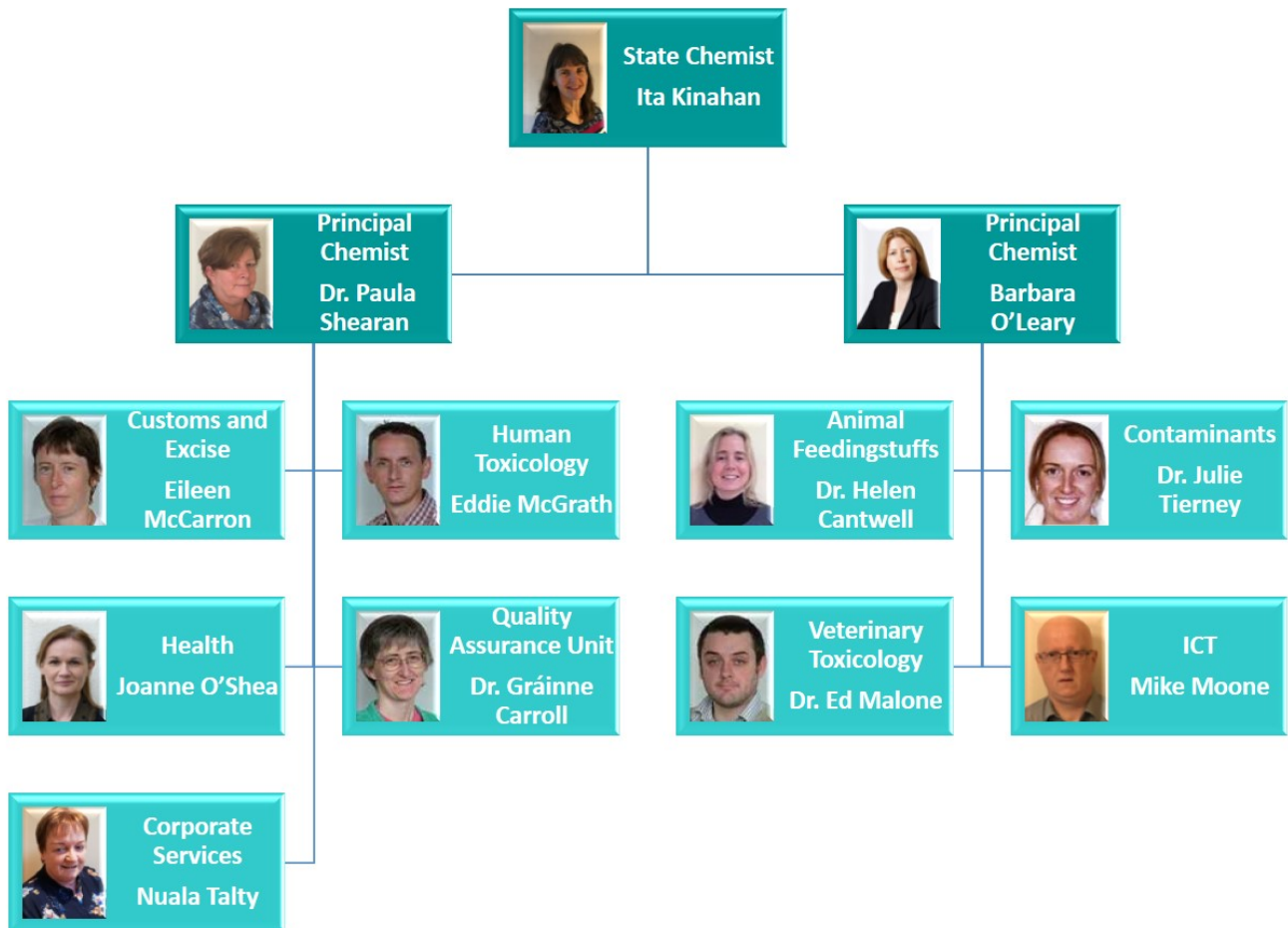
APPENDIX III

IRISH NATIONAL ACCREDITATION BOARD ACCREDITED TESTS. SUMMARY OF SCHEDULE OF ACCREDITATION (Edition 2: 26/11/2019)*

Matrix	Measurand	Test Method	Method ID
Honey	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 V063
Milk	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 V064
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 Kidney	Flexible Scope (Matrices, Residues and Ranges) Non Steroidal Anti Inflammatory Drugs (12)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC)	LSD V068
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
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
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 Liver	Flexible Scope (Matrices, Residues and Ranges) Toxicants (20)	In house method. By LCMSMS	LSD V077
Milk	Flexible Scope (Matrices, Residues and Ranges) Corticosteroids (6)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V078
Animal Milk	Flexible Scope (Matrices, Residues and Ranges) Non Steroidal Anti Inflammatory Drugs (12, 5)	In house method by LCMSMS meeting requirements of Council Directive 96/23/EC (2002/657/EC).	LSD V091

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

APPENDIX IV ORGANISATION CHART (AS OF 31-DEC-2019)



APPENDIX V STAFF LIST—BY GRADE (AS OF 31-DEC-2019)

State Chemist			
Ita Kinahan			
Principal Chemist			
Barbara O’Leary		Dr. Paula Shearan	
Senior Chemist			
Dr. Helen Cantwell Dr. Gráinne Carroll	Eddie McGrath Dr. Ed Malone	Eileen McCarron Joanne O’Shea	Dr. Julie Tierney
Chemist Grade II			
Dr. Jonathan Carroll Dr. Eleanor Dixon Dr. Pierrick Fevrier	Dr. John Fields Niamh Fitzgerald Lynda Harman	Myra Keogh Dr. Sean McGowan Audrey Nugent	Ruth Reilly Claire Timbs Mairéad Webster
Chemist			
Sinead Bermingham Ann Marie Bragason Dr. Helen Burke David Canny Paula Clarke Dr. Mark Cronly	Michael Doyle Sinead Dunlop Joe Fitzsimons Carol Gleeson Veronica Gubarkova Margarete Houlihan	John Judge Ray Kelly Shonagh Masterson Vicky MacEoin Úna McArdle Conor Noone	Dr. Mark McDonald Dr. Amy Nagle Olivia O’Connor Dr. Colmán Ó Ríordáin John Reilly Dr. Hannah Smith Patrick Saunders
Health and Safety and Facilities Liaison Manager			
Michael Butler			
Senior Laboratory Analyst			
Laura Flynn Fiona Gallagher Marella Gallagher	Bernard Hanratty Tom Harbison Ciara Keane	Sheila Martin Aengus Ó Briain Dennis Sheehan	
Laboratory Analyst			
Patricia Carter Joanne Creedon Simon Daly Aisling Dooley Laura Dowling Klaudia Dyrda	Madeleine Gibbons Ian Kelleher Stephen Leech Alan Murphy Laura McGloin Patrick McNamara Dr Tony O’Hara	Niamh O’Shea Colm Reid Cathy Rooney Sinéad Ryan Niall Stanford Emma Smith Emma Jane Walsh	Fiona White Gavan White
Head Laboratory Attendant/Laboratory Attendant			
John Moylan	Tom Gaule Doris Lee Flynn Caroline Manning Anthony McEvoy		
Corporate Services			
Nuala Talty - Assistant Principal Dr. Michael O’ Gorman (TIC Manager Grade II) Margaret Harney - Administrative Officer Mary Quine - Higher Executive Officer Phyllis Barry - Executive Officer Damien Duffy - Executive Officer		Ann Timlin - Executive Officer Angelina O’Shea - Clerical Officer Geraldine Gaffney - Clerical Officer Sharon McEvoy - Clerical Officer Miriam Kavanagh - Clerical Officer Declan Powell - Storekeeper	
ICT			
Mike Moone – Assistant Principal	Anton Bennett - Higher Executive Officer	Gerard O’ Brien - Executive Officer	



Prepared by The State Laboratory | Backweston Campus | Young's Cross | Celbridge | Co. Kildare