Fera NRL Annual Report 2018 to 2019

Report to the Food Standards Agency




Annual Report

Annual Report on Operation of National Reference Laboratory (Chemical Safety in Food and Feed) by Fera Science Ltd.

April 2018 – March 2019

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Note: Whilst care has been taken to ensure that the web links contained in this report are correct at the time of issue, changes may occur.

Contents

1. List of abbreviations

APA	-	Association of Public Analysts
BfR	-	Bundesinstitut für Risikobewertung
BFR(s)	-	Brominated Flame Retardants
CEN	-	European Committee for Standardization
Competent Authority (CA)		Central authority of a Member State competent for the organisation of official controls
CP(s)	-	Chlorinated paraffins
CWG	-	Core Working Group
EC	-	European Commission
EFSA	-	European Food Safety Authority
EU	-	European Union
EURL	-	European Union Reference Laboratory
EURL-FCM	-	EURL-Food Contact Materials
EURL-MN	-	EURL-Metals and Nitrogenous Compounds
EURL-MP	-	EURL-Mycotoxins and Plant Toxins
EURL-PC	-	EURL-Processing Contaminants
EURL-POPs	-	EURL-Persistent organic pollutants
Fapas ®	-	Food Analysis Performance Assessment Scheme
FCM	-	Food Contact Materials
Fera	-	Fera Science Ltd
FSA	-	Food Standards Agency
FSS	-	Food Standards Scotland
MANCP	-	Multi-Annual National Control Plan
MS	-	Member State(s)
NRL	-	National Reference Laboratory
NRL-FCM		National Reference Laboratory – Food Contact Materials
NRL-MN		National Reference Laboratory – Metals and Nitrogenous Compounds
NRL-MP		National Reference Laboratory – Mycotoxins and Plant Toxins
NRL-PC		National Reference Laboratory – Processing Contaminants
NRL-POPs		National Reference Laboratory - Persistent organic pollutants
OCL	-	Official Control Laboratory
PAHs	-	Polycyclic Aromatic Hydrocarbons
PC	-	Processing Contaminants

PCBs	-	Polychlorinated biphenyls
PCDDs	-	Polychlorinated dibenzo-p-dioxins
PCDFs	-	Polychlorinated dibenzofurans
PCDD/Fs	-	collectively referred to as dioxins
PFAS	-	Per- and Polyfluoroalkyl Substances
PFOA	-	Perfluorooctanoic acid
PFOS	-	Perfluorooctanesulfonic acid
POPs	-	Persistent organic pollutants
PT(s)	-	Proficiency test(s)
RASFF	-	Rapid Alert System for Food and Feed

2. Introduction

Fera is the UK National Reference Laboratory (NRL) for five areas of Chemical Safety in Food and Feed.

This Annual Report covers NRL activities from 1st April 2018 to 31st March 2019.

Background

A harmonised framework of rules for European Union (EU) Member States (MS) to adhere to at a Community level is established under Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules.

The European Commission (EC) created a network of laboratories at EU and Member State levels. This network of laboratories is responsible for setting up EU-wide standards for routine procedures and reliable testing methods in the areas of feed, food and animal health.

European Union Reference Laboratories (EURLs) are appointed by the Commission through Regulation (EU) No 625/2017. The Articles relevant to EURLs came into force on 20 April 2018 and replaced and repealed Regulation (EC) No 882/2004. EURLs assist the harmonisation process by increasing the current analytical scope throughout the EU in quantity and quality of the results. Article 94 of Regulation (EU) No 625/2017 gives the responsibilities of the EURLs which include provision of existing and new analytical and reference methods and their application, comparative testing and appropriate follow-up and provision of training courses. EURLs provide scientific and technical assistance to the Commission, especially in cases where Member States contest the results of analyses.

Under Article 2, Regulation (EC) No 882/2004 defines a ‘competent authority’ as the central authority of a Member State competent for the organisation of official controls. The UK competent authorities responsible for official controls in respect of feed and food law are designated formally in domestic legislation that gives effect to Regulation (EC) No 882/2004 at a national level.

For each EURL, the competent authority of a Member State designates one or more NRL. The responsibilities of NRLs are laid out in Article 101 of Regulation (EU) No 625/2017.

In the UK, responsibility for official feed and food controls is held at central Government level. Responsibilities are devolved; the competent authorities are the Food Standards Agency (FSA) in England, Wales and Northern Ireland and Food Standards Scotland (FSS).

Central competent authorities designate official laboratories for the purposes of chemical analysis or microbiological examination of feed or food samples taken by enforcement practitioners. Control bodies are independent third-party organisations to which specific

control tasks have been delegated by the competent authority including chemical analysis, inspection or sampling. In the UK these functions are carried out by Official Control Laboratories (OCLs). The competent authority retains the responsibility for the work and for taking any formal enforcement action should non-compliance be found. Control bodies are subject to audit or inspection by the competent authorities in respect of the control tasks delegated to them.

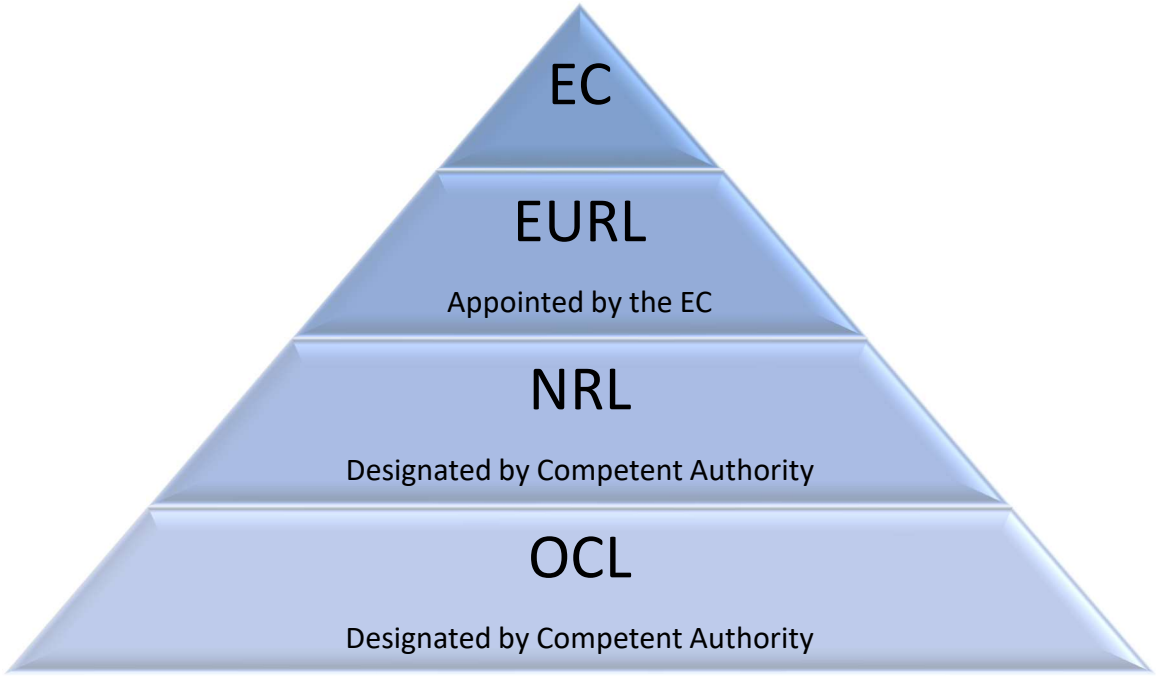

Figure 1: EU laboratories network

This establishes a network between EURLs, NRLs and OCLs. The overall objective of the EURLs and NRLs is to improve the quality, accuracy and comparability of the results of OCLs.

Under Commission Regulation (EU) 2018/192 of 8 February 2018 amending Annex VII to Regulation (EC) No 882/2004 of the European Parliament and of the Council as regards the EU reference laboratories in the field of contaminants in feed and food, there were changes to some EURLs. As stated in Commission Regulation (EU) 2018/192, new EURLs were appointed from 31st December 2017 in the areas of heavy metals in feed and food, Polycyclic Aromatic Hydrocarbons (PAHs) and mycotoxins in food and feed. Details of the current relevant EURL for each area and its scope are detailed in the corresponding NRL section.

Full details, including contact information and website links for the five EURLs pertinent to this report are given in Appendix 1.

Contact information for all five Fera NRLs is given in Appendix 2.

3. Role and scope of the NRL

In summary, it is a requirement of Regulation (EU) No 625/2017 in Article 101 that NRLs in their area of competence:

a) collaborate with the EURL and participate in training courses and inter-laboratory comparative tests

b) coordinate the activities of official laboratories with a view of harmonising and improving the methods of laboratory analysis, test or diagnosis and their use

c) where appropriate, organise inter-laboratory comparative tests between the official laboratories and ensure an appropriate follow-up of such comparative testing and inform the competent authorities of the results and follow-up

d) ensure the dissemination to the competent authority and official laboratories of information that the EURL supplies

e) provide scientific and technical assistance to the competent authority for the implementation of MANCPs referred to in Article 109 and of coordinated control programmes adopted in accordance with Article 112

f) where relevant, validate reagents, establish and maintain up-to-date lists of available reference substances and reagents and manufacturers and suppliers

g) where necessary, conduct training courses for the staff of official laboratories designated under Article 37

h) actively assist the Member State having designated them in the diagnosis of outbreaks of foodborne diseases and in case of non-compliance of consignments by carrying out confirmatory characterisation

Fera acts as the UK NRL in the following five areas:

- NRL Mycotoxins and Plant Toxins in Food and Feed
- NRL Heavy Metals and Nitrogenous Compounds in Food and Feed
- NRL Halogenated Persistent Organic Pollutants (POPs) in Food and Feed
- NRL PAHs and Processing Contaminants in Food
- NRL Materials and Articles in Contact with Food

This NRL contract duration was from 1st April 2017 until 31st March 2019.

Fera may also be called upon to offer advice to the FSA relating to the impact of EU Exit on food controls.
A list of website links for each NRL and their corresponding EURL are given in the References Section.

4. NRL Mycotoxins and Plant Toxins in Food and Feed (NRL-MP)

Mycotoxins are secondary metabolites produced by some moulds that can occur in a wide range of foods, often with no visible signs of mould spoilage to the food. They have a wide range of chemical properties and toxicities to humans and food-producing animals. Exposure to some mycotoxins is controlled through European and National Legislation. The Contaminants in Food (England) Regulations 2013 provide for the enforcement of European Commission Regulation (EC) No 1881/2006, setting maximum levels for certain contaminants in foodstuffs. There are similar domestic Regulations for Scotland, Wales and Northern Ireland. Methods to be used for sampling and analysis for enforcement purposes are prescribed in Commission Regulation (EC) No 401/2006 and its subsequent amendments Commission Regulation (EU) No 178/2010 and Commission Regulation (EU) No 519/2014. Directive 2002/32/EC establishes the maximum levels of contaminants, including aflatoxins, permitted in feed. Recommendation 2006/576/EC sets Guidance Values for a range of other mycotoxins.

Plant toxins or phytotoxins are toxic chemicals produced by plants, whose main function is to act as defensive agents against predators. Most examples of plant toxins are members of various classes of secondary metabolites, including alkaloids, terpenes, and phenolics. Plant toxins may also be toxic to humans and animals. Maximum limits have been set for several plant toxins through European food and feed regulations, Commission Regulation (EC) No 1881/2006 (as amended) and Directive 2002/32/EC on undesirable substances in animal feed (as amended). These include erucic acid, theobromine, gossypol, tropane alkaloids and hydrocyanic acid. EU Monitoring Recommendations are in place for tropane alkaloids, tetrahydrocannabinol (THC) and its precursors, pyrrolizidine alkaloids and opium alkaloids. Discussions are ongoing at an EU level about setting maximum levels for pyrrolizidine alkaloids in several foods including teas, herbal teas, plant-based food supplements, culinary herbs and honey and for tropane alkaloids in foods other than infant food.

From 1st April 2017, the scope of the Mycotoxin NRL was expanded to also include plant toxins under Commission Regulation (EU) 2018/192.

NRL contact: Susan MacDonald Susan.MacDonald@fera.co.uk

EURL-MP

The EURL for mycotoxins and plant toxins aims to facilitate the implementation of European legislation related to monitoring of mycotoxins in food of plant origin and animal feed.

RIKILT Wageningen University & Research has been the EURL mycotoxins and plant toxins since 1st March 2018. As of 1st June 2019, RIKILT and the Food and Feed Safety Laboratory of the Netherlands Food and Consumer Product Safety Authority (NVWA) will form a new institute: Wageningen Food Safety Research (part of Wageningen University & Research).

5. NRL Heavy Metals and Nitrogenous Compounds in Food and Feed (NRL-MN)

Contaminants such as heavy metals are substances that have not been intentionally added to food. These substances may be present in food as a result of the various stages of its production, packaging, transport or holding. They also might result from environmental contamination. Since contamination generally has a negative impact on the quality of food and may imply a risk to human health, European legislation lays down maximum allowed limits in foodstuffs. EU regulations cover the following heavy metals: cadmium, lead, mercury, arsenic and inorganic tin.

Commission Regulation (EC) No 1881/2006 sets maximum levels for certain contaminants in foodstuffs. It is amended by Commission Regulations (EU) No 2015/1005 for Lead, (EU) No 488/2014 for Cadmium and (EU) No 2015/1006 for inorganic arsenic. Commission Regulation (EU) No 1258/2011 for nitrates in foodstuffs and Commission Regulation (EU) No 594/2012 adds maximum levels for melamine in foodstuffs. Undesirable substances in feed, including nitrite and melamine, are covered by Directive 2002/32/EC, amended by Commission Regulation (EU) No 574/2011. Sampling methods and the methods of analysis for the official control of the levels are given in Commission Regulation (EC) No 333/2007 and Commission Regulation (EU) 2016/582 for lead, cadmium, mercury, inorganic tin and inorganic arsenic and in Commission Regulation (EC) No 1882/2006 for nitrates.

In alignment with the EURL changes under Commission Regulation (EU) 2018/192, the NRL scope was extended from 1st April 2017 to include metals such as aluminium and nickel as well as heavy metals and nitrogenous compounds (nitrate, nitrite and melamine). The 2019 EURL Workshop featured discussions relating to the expanded scope of metals analysis including speciation. Nickel in feed was highlighted as a potential source of chronic exposure from food of animal origin. A Meeting Note was prepared for the FSA summarising the planned work programme and future PTs decided at the meeting.

The increasing trend in seaweed products for human consumption highlights the fact that no levels are currently set for seaweed as a food. Under Commission Recommendation (EU) 2018/464 of 19 March 2018 on the monitoring of metals and iodine in seaweed, halophytes and products based on seaweed, monitoring is to run from 2018 to 2020 covering arsenic, cadmium, iodine, lead and mercury (methylmercury and total mercury). Levels set for feed may also require review.

NRL contact: Mike Walls michael.walls@fera.co.uk

EURL-MN

From 1st January 2018, the EURL for metals and nitrogenous compounds (EURL-MN) has been hosted by the National Food Institute at the Technical University of Denmark (DTU). An increase in scope saw nitrogenous compounds added to the remit of the EURL.

6. NRL Halogenated Persistent organic pollutants (POPs) in Food and Feed (NRL-POPs)

Halogenated persistent organic pollutants (POPs) are toxic, organic compounds containing chlorine, bromine and/or fluorine. Some are (or have been) produced intentionally, others are unwanted by-products in the production of other chemicals or created through industrial processes such as incineration. Many are listed in the Stockholm Convention (UN Environment Programme, 2019) which aims to eliminate (Annex A) or restrict (Annex B) the production and use of some chemicals and to reduce the unintentional release (Annex C) of others. Information on the Stockholm Convention can be found at www.pops.int
The annexes themselves can be found at
http://www.pops.int/TheConvention/ThePOPs/AllPOPs/tabid/2509/Default.aspx
And links within the website are available listing chemicals that are being proposed for listing in the future.

Some examples of halogenated POPs are:

Polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and polychlorinated biphenyls (PCBs); their effects on human health include dermal toxicity, immunotoxicity, reproductive effects and teratogenicity, endocrine disrupting effects and carcinogenicity.

Brominated flame retardants (BFRs); commonly used to reduce flammability in a variety of products. Certain BFRs have been banned or restricted in the EU but they persist in the environment where they enter the food chain and are potentially harmful. Polybrominated diphenyl ethers (PBDEs) are additive flame retardants and are environmentally ubiquitous. Hexabromocyclododecanes (HBCDDs) are also additive flame retardants.

Perfluoroalkyl Substances (PFAS); a range of synthetic chemical compounds used across a range of industries for their water proofing, grease proofing and stain repellent properties. The widespread use of PFOS, PFOA and their precursors, together with their persistency, has resulted in widespread environmental contamination.

Chlorinated paraffins (CPs); are a complex mixture of polychlorinated n-alkanes. The degree of chlorination is variable (between 30 and 70% by weight). They are categorised based on their carbon chain length: short-chain CPs (SCCPs, $C_{10–13}$), medium-chain CPs (MCCPs, $C_{14–17}$) and long-chain CPs (LCCPs, $C_{>17}$). They have various uses such as temperature moderators for machining/drilling processes, flame retardants and plasticisers. SCCPs are listed in the Stockholm Convention in Annex A (elimination) due to their toxicity. MCCPs are also toxic and persistent but are not listed in the Stockholm Convention.so emphasis on production has moved away from SCCPs to medium-chain (MCCPs) and long-chain chlorinated paraffins (LCCPs).

NRL contact: Frankie Smith frankie.smith@fera.co.uk

EURL-Halogenated POPs

The EURL for halogenated POPs in food and feed aims to facilitate the implementation of European legislation related to monitoring of halogenated POPs in food and feed. The EURL for dioxins and PCBs in feed and food became the EURL for halogenated persistent organic pollutants (POPs) in feed and food to reflect the extension of scope in Commission Regulation (EU) 2018/192.

The EURL remains hosted by the State Institute for Chemical and Veterinary Analysis (CVUA Freiburg).

The UK NRL is actively involved in each of the current Core Working Groups coordinated by the EURL: (i) Dioxin Congener Patterns; (ii) BFRs; (iii) PFAS; (iv) Chlorinated Paraffins.

7. NRL PAHs and Processing Contaminants in Food (NRL-PC)

Process contaminants are formed during food processing or heat treatment and will be dependent on the conditions used and the foodstuff. Since 1st April 2017, food processing contaminants including furans, monochloropropanediols (MCPD) and their esters, glycidyl esters and acrylamide were included as part of the polycyclic aromatic hydrocarbons (PAH) NRL responsibilities, and the EURL role renamed as Processing Contaminants (EURL-PC) under Commission Regulation (EU) 2018/192.

PAHs are organic compounds containing two or more fused aromatic rings made up of carbon and hydrogen atoms. PAHs may be formed and released during incomplete combustion or pyrolysis of organic matter, during industrial processes and by natural processes, such as carbonisation. In food, PAHs may be formed during industrial and domestic food preparation, such as smoking, drying, roasting, baking, frying or grilling. Since some PAHs are carcinogenic, their presence in food is controlled by European Commission Regulation (EC) No 1881/2006, setting maximum levels for benzo[a]pyrene, benzo[a]anthracene, benzo[b]fluoranthene and chrysene in certain food stuffs.

Acrylamide is generated during the heat treatment of carbohydrate rich foods and based on animal studies potentially increases the risk of developing cancer for consumers in all age groups (EFSA, 2015). Commission Regulation (EU) 2017/2158 will try to help reduce consumer exposure to acrylamide. This will establish best practice and benchmark levels for the reduction of the presence of acrylamide in food.

EFSA published a scientific opinion in October 2017 concluding exposure to furan in food is a potential human health concern (EFSA, 2017).
Based on animal studies, liver damage and liver cancer are the most critical health effects. Furans, and related compounds 2- and 3- methyl furan, are found in a variety of foods including coffee and food stored in cans, jars, packets and pouches.

3-MCPD is created in foods during protein hydrolysis when hydrochloric acid is added at high temperature to speed up the breakdown of proteins into amino acids. MCPD esters and glycidyl esters are formed when refining vegetable oils at high temperatures (>200°C). Glycidyl fatty acid esters are hydrolysed into glycidol, a genotoxic and carcinogenic compound, in the gastrointestinal tract. Glycidyl fatty acid esters expressed as glycidol in vegetable oils, vegetable fats and infant formula are also included in Commission Regulation (EU) 2018/290. There is a stricter maximum level for vegetable oils and fats destined for baby food production and processed cereal-based food for infants and young children. The maximum level in infant formulae is set to decrease over time to allow food businesses time to adapt their production processes.

NRL contact: Sean Panton sean.panton@fera.co.uk

EURL-PC
The EURL Processing Contaminants has been hosted at DTU, Denmark since 1st January 2018.

8. NRL Materials and Articles in Contact with Food (NRL-FCM)

The term ‘materials and articles in contact with food’ describes any materials and articles intended to come into direct contact with food (and beverages), such as packaging, kitchenware, tableware and cutlery. It also includes materials and articles used in production and processing equipment that will have indirect contact with food (and beverages), as well as transport and storage containers.

These materials and articles can be made from plastics, paper and board, rubber, metal, glass or ceramics etc. and any chemical constituents present in them have the potential to transfer into the foods (and beverages) with which they come into contact. In addition, the chemicals present in any adhesives, coatings or printing inks applied to these substrates also have the potential to transfer. This is known as chemical migration (defined as ‘the mass transfer from an external source into food by sub-microscopic processes').

European Union (EU) legislation (Regulation (EC) No 1935/2004) is implemented in the United Kingdom and this specifies that materials and articles in contact with food should not transfer their constituents to food (and beverages) at unsafe levels so as to endanger health or adversely affect the nature or quality of the food (or beverage).

NRL contact: Claire McKillen claire.mckillen@fera.co.uk

EURL-FCM

The Joint Research Centre (JRC) located in Ispra, Italy remains the European Union Reference Laboratory for Food Contact Materials (EURL-FCM). It is supported by colleagues from the JRC located in Geel, Belgium who provide expertise in trace elements, method validation and proficiency testing.

Supported by the Network of NRLs, they:

- Provide scientific and technical assistance to the EU and the Member States.
- Organise inter-laboratory comparison exercises.
- Conduct training courses for the benefit of NRLs and of experts from developing countries.

9. Objective 01: Secretariat services

As the NRL, Fera will provide support to the FSA, OCLs and other relevant laboratories through the dissemination of information, guidelines, meeting notes, test protocols and analytical methods, reporting of results, website maintenance and hosting regular meetings of the relevant parties.

Task 1. *Disseminate information/advice supplied by the EURL and its working groups to the FSA, OCLs and other relevant laboratories in a timely and effective manner.*

Fera provides documents received from the EURLs within two weeks of receipt. These documents are available in a central IT location for direct access by the FSA. Publicly available documents or links are added to the Fera NRL website.

Task 2. *Co-ordinate activities of OCLs and other relevant laboratories in relation to the core functions.*

A Steering Committee Meeting is used to manage the operation of this NRL function. The Steering Committee acts to ensure effective communication between OCLs and the NRL and as a vehicle for feedback by OCLs on NRL performance. This has already been proven to be a valuable platform for the exchange of information and for feedback on performance and includes the FSA as well as the OCLs and Fera. It is used to define the training activities required for the next period as well as visits and other support required.

Task 3. *Create and maintain an efficient two-way channel of communication with OCLs and relevant laboratories and the EURL, including dissemination of information on analytical methods and EU Regulations to OCLs and feedback of comments from the OCLs to the EURL.*

Fera experts regularly scan different scientific literature (peer reviewed and grey literature) relevant to each area for emerging food and feed safety topics, and includes ResearchGate, HorizonScan and Rapid Alert System for Food and Feed (RASFF). There are also established links with the EURL Network. Relevant information on current and new methods and Legislation is highlighted on the Fera NRL website.

Fera seeks feedback on questions or issues from the OCLs to raise with the EURL or the other NRLs with whom they already have a dialogue and established working relationship thus ensuring efficient two-way communication.

Fera maintains a dedicated NRL e-mail address which is regularly monitored:

nrl@fera.co.uk

Task 4. *Provide regular updates to the FSA on NRL activities, and up to date information on UK OCLs and other relevant laboratories to the FSA as requested.*

A monthly NRL Activity Log is prepared and submitted to the FSA. All work is then summarised in an Annual Report. Specific topics or items arising are dealt with individually in a timely manner.

Task 5. *Create and maintain a dedicated website for communication of the work of the NRL including provision of advice and support to OCLs, information on methods of analysis, SOPs, latest developments and other background information.*

Fera has a long standing existing dedicated NRL website as part of its NRL services and provides information on legislation, analysis, resources, latest developments, meetings and conferences. It was set up to meet the needs of the OCLs and feedback from the OCL representatives at the Steering Group Meetings confirmed that it fully met their needs and expectations. The NRL website was updated in line with a corporate revamp of the Fera website:

https://www.fera.co.uk/about-us/national-reference-laboratory

A list of relevant tasks carried out is given below:

- The CEO and the Director of Finance and Performance of the FSA visited Fera. Several issues were discussed including the NRL/OCL network and the UK exit strategy. A tour of the Fera laboratories and facilities was given.
- In March 2019 an email was received from the FSA concerning NRL activities with EURLs following a letter from the Commission concerning NRL engagement in EURL activities in a no-deal Exit.
- The NRL-POPs submitted a completed questionnaire to the EURL-POPs (and copied to the FSA) regarding the analytical capabilities of the NRLs for analytes included in the extension of scope of NRLs for halogenated POPs.
- The EURL-FCM list of NRL and OCL contact details was updated.
- The 11th Steering Group Meeting was held in September 2018 at Fera, York. The meeting was an opportunity for an update on Fera NRLs, EURLs and regulatory aspects from the FSA and FSS. The meeting allows the NRLs to meet the requirement as required by legislation under Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017; Article 37, 3(c). It was attended by FSA staff (in person and by telecon), FSS, eight OCLs and Fera NRL staff. The scope of the meeting covered a description of activities in each NRL area. APA meeting and conference dates were made available.
- There was contact with the Association of Public Analysts (APA) throughout the year. The APA is an independent, professional association whose members are appointed Public Analysts. Liaison between the NRL and the APA, and therefore the Official Control Laboratories (OCLs) was strengthened by members of the NRL becoming associate members of the APA.
- Content was reviewed and updated on the Fera NRL website. This included updates to NRL titles to take into account wider remits (extension to scope) under Commission Regulation (EU) 2018/192.
- An enquiry was received from a Food Technology Centre requesting help for PAHs in smoked products. Information was sent and the contact details for the FSA in Wales were supplied.

- An email was received from the National Aquatic Resources Research and Development Agency, Sri Lanka in January 2019 requesting advice on analysis of PAHs in fish. They provided their method of analysis and advice was given on their methodology.

10. Objective 02: Advice and representation within the UK/EU

Fera will provide impartial expert advice to the FSA, OCLs and other relevant laboratories on all issues relating to contaminants and food contact materials, e.g. updates in legislation, testing methodologies, emerging issues and publications.

Task 1. *Provide impartial expert advice as requested to the FSA, OCLs and other relevant laboratories on analytical methodology in the context of Official Controls.*

All advice provided by Fera staff is impartial and is based on our heritage as an official Government Laboratory. Fera scientists have maintained their experience in evaluation of analytical methods when considering the suitability of data for inclusion in exposure assessments, e.g. via participation in EFSA working groups.

Fera staff are experienced in method development and validation and have developed methods that are used in Official Controls in the UK. This is complemented by in-depth knowledge of the performance requirements of sampling and analytical methods used in Official Controls.

Fera outcomes:

- The FSA requested comments/observations on a number of questions from the Commission including references to potential changes to Maximum Levels for a number of elements and issues with representative sampling of large fish. OCLs were emailed asking for their feedback; no replies were received and the NRL-MN responded.
- A member of the NRL-MP gave a presentation on mycotoxins in UK cereals at a meeting hosted by Food Standards Scotland (FSS).
- The FSA requested information that had been received from the EURL-POPs regarding PTs/ CWGs/ Network Meetings and participation beyond EU Exit. The NRL-POPs contacted the EURL-POPs for clarification of implications of EU Exit (particularly if no-deal was agreed), and whether the NRL would be able to attend future network meetings and participate in PTs. The EURL-POPs replied that the EC had informed them that if no deal was in place then the UK NRL-POPs would not be invited to participate in future PTs or network meetings/CWGs. Later in March 2019, the EURL-POPs informed Fera that it would be possible to attend the next meeting regardless of a no deal EU Exit as Fera were participating in the current PTs.
- The NRL-POPS contacted the EURL-POPs to check that the EURL would pay participation fees for NRLs taking part in the PFAS PT scheme organised by UNEP and University of Örebro, Sweden, as had been proposed at the EURL/NRL network meeting. This was so that the EURL-POPs did not need to organise a separate PT scheme for PFOS/PFAS in year. The EURL confirmed that they would pay participation fees for the PFAS analyses. An "Article on PFAS" from the EURL-POPs which summarised the topic of PFAS analysis, its importance and some of the problems/issues, was received and forwarded to the FSA. In September 2018 the NRL-POPs received an invitation and completed a survey from the EURL-POPs

regarding PFAS analysis at the laboratory and interest in participating in future PT schemes for PFAS. The EURL-POPs subsequently organised its own EURL PT for PFAS/ PFOS and this was started within the period covered by this report.

Task 2. *Represent the UK at relevant EURL meetings, and its working-groups, consulting the FSA on objectives and requirements before each meeting and providing the FSA with an internal report of the meeting within two weeks of each meeting.*

Agendas received in advance of EURL meetings were forwarded to the FSA and information was exchanged either by telecon or by e-mail to ensure that the Fera member of staff attending the meeting was aware of any particular FSA interests or requirements. Any points highlighted were raised in the meeting and the discussions documented and included in the meeting note. Meeting notes were provided to the FSA promptly.

Fera outcomes:

- The first EURL-NRL Workshop for Mycotoxins and Plant Toxins was held in RIKILT on the 9th to 10th October 2018. The Workshop covered PT exercise follow-ups from the previous EURL (JRC-Geel), the recent PT for DON compounds, the results of the laboratory inventory of NRLs, methods of analysis for pyrrolizidine alkaloids, ergot alkaloids and cyanogenic glycosides as well as updates from the CEN working groups on natural toxins and the EU Mycotoxin Research Projects. An update was given on legislation and emerging issues related to mycotoxins and plant toxins. There was also an update on methods for cyanogenic glycosides. Delegates had a tour of the RIKILT laboratory facilities. Copies of presentations and a note of the meeting were provided to the FSA.
- The EURL-MP invited the NRL-MP to be a member of an EURL Working Group on criteria for methods of analysis for mycotoxins and plant toxins. The first meeting of the group will be held in May 2019.
- NRL-MN attended the 2018 EURL-MN Workshop in November 2018 at DTU in Copenhagen. The FSA was contacted prior to the Workshop to check if any matters needed to be raised. A Meeting Note was sent to the FSA after the Workshop. Topics discussed at the Workshop included the results of the PTs for metals in Chilli powder and poultry feed, and an update from the Commission on metal contaminant issues. A significant part of the Workshop was spent introducing the delegates to the new EURL-MN, and the planned activities, as well as group discussions on analysis of nitrites in feed, stability and storage guidelines, and possible future PTs, the response to which covered a wide range of materials and analytes including arsenobetaine.
- Dioxin Patterns and Brominated Flame Retardants Core Working Groups (CWGs) met and the NRL-POPs attended. Meeting Notes and Technical Reports were forwarded to the FSA. The EURL-POPs announced three CWG meetings to be held in Freiburg in October 2018 for PFAS, Chlorinated Paraffins and BFRs. These were also attended by a UK NRL-POPs delegate. Where received, draft and final Technical Reports were forwarded to the FSA along with relevant Meeting Notes.
- The first EURL/NRL Workshop-halogenated POPs of 2018 was attended by two representatives of the NRL-POPs. A subsequent Meeting Note was sent to the FSA. The Draft Technical Report of the Workshop was received prior to the second

Workshop and was forwarded to the FSA. The second Workshop was also attended later in the year with follow up documents provided.

- The 2018 EURL-PC Workshop was held at DTU in Copenhagen and was attended by the NRL-PC. The FSA was contacted before the Workshop to allow any information to be presented or collected.
- An FCM Plenary Meeting took place in October 2018 at the JRC office in Geel, Belgium. There was also a training course on Measurement Uncertainty. A Meeting Note was provided.

Task 3. *Participate in activities organised by the EURL and contribute to the scientific input at EURL meetings and in a manner which supports UK policy based on best available scientific knowledge.*

Fera staff continue to be trained in new and emerging areas, e.g. by attending the annual EURL meeting, EURL training events and relevant conferences to maintain expert knowledge.

Fera outcomes:

- The FSA supplied a copy of the EURL-MP Work Programme for 2018 to the FSA. This was reviewed to allow Fera to align its activities.
- The EURL-MP circulated a detailed questionnaire to NRLs to obtain information about laboratory capacity and capability for mycotoxins and plant toxins. They requested information about method availability, accreditation status, LOD and LOQ and the numbers of samples that are analysed annually. They also asked for the number and names of UK OCLs. This was completed and returned to the EURL-MP by the deadline. Fera NRL-MP asked if the same questionnaire could be circulated to the UK OCLs to obtain this information too and the EURL-MP agreed as they would probably want to collect this information from OCLs at a later date.
- A spreadsheet was received from the EURL-MN conducting a survey investigating how the scope of the EURL is covered by the NRLs. This was completed and returned.
- The EURL-MN circulated a newsletter with dates for the 2019 Workshop and upcoming PT rounds; the newsletter was forwarded to the FSA. They also offered a training course in inorganic arsenic analysis using HPLC.
- The EURL-POPs requested that NRLs check the draft version of the evaluation of the questionnaires with regard to the extension of scope of NRLs in the field “halogenated persistent organic pollutants (POPs) in feed and food”. This was checked and no comments/corrections were made.
- The NRL-POPs received a survey from the EURL-POPs regarding Limits of Quantitation for dioxins and PCBs in a range of matrices as a response to the EU Commission's request for a Position paper in preparation of potential changes to maximum levels. Fera replied, a summary report of the survey results was received and forwarded to the FSA: "Position paper analytical limits 2019-01-25".
- An updated work plan for the year 2019 was received from the EURL-PC and forwarded to the FSA.

- Notification was received that the two EURL-PC PTs for 2019 would be PAHs in food supplements and furans and acrylamide (combined) in coffee.
- The EURL-FCM requested suggestions for PTs in 2020 and training for 2019 to take under consideration. The EURL-FCM gave provisional dates for the plenary meeting (now only one per year).

Task 4. *Advise the FSA, OCLs and other relevant laboratories on best scientific practice in testing for Official Controls and undertaking activities in consultation with the FSA that facilitate and promote their application in the UK within the policy aims of the FSA.*

Maintaining an up-to-date website, providing feedback from EURL-NRL network meetings in a timely manner and offering practical training to OCLs, ensure that this task is met.

Fera outcomes:

- There was correspondence between the NRLs and the FSA on a variety of issues including planning how to improve capacity and capability in the UK OCLs by training and provision of PTs.
- NRL staff gave two ninety minute presentations to approximately 15 delegates, including Trading Standards Office (TSO) staff at the MChemA training course at Reading University in April 2018. These were:
    - ‘Contaminants - Regulations and Methods’
    - ‘An introduction to materials and articles in contact with food’
- The FSA requested information on methods and OCL capability and capacity in certain areas e.g. hydrocyanic acid (HCN), ergot alkaloids and ochratoxin A and this was provided. The NRL-MP agreed to follow up with a specific questionnaire to try to capture the laboratories responses. The FSA asked if the NRL-MP could provide training on hydrocyanic acid (HCN) analysis to OCLs. This was tabled to be discussed at the next Steering Group meeting. Following this, the NRL-MP contacted the EURL-MP to ask about analysis and regulations for hydrocyanic acid (HCN) in apricot kernels. The EURL-MP replied with information about analytical methods and noted the outstanding issues around the regulations. The EURL-MP noted that they had received queries from other NRLs. The EURL-MP offered a PT for HCN in animal feed as part of their commercial programme; this was circulated to UK OCLs but none of the OCLs took up the offer. The EURL-MP stated there had been very little interest in the PT overall and that they would pick up the topic with the EURL-NRL network the following year. This information was passed to the FSA (Methods and Policy Branches) and was discussed at the Steering Group meeting. The OCLs were asked if any of them performed the test or received any requests for it. None of the OCLs performed the test and they had not received samples or requests for it so were reluctant to make investment in setting up a method that would not be used.
- The NRL-MP gave a presentation on ‘Methods of Analysis for Mycotoxins’ at a Workshop at Cranfield University in March 2019. The delegates were from OCLs, industry, laboratories, research institutes and universities.
- Advice and information were provided to an OCL about slurry mixing of samples for mycotoxin analysis.

- A request was received from the Spanish NRL-POPs in January 2019 asking for help sourcing a calibration compound essential for operating Magnetic Sector high resolution mass spectrometers as there had been a global shortage of supply. Details were provided of the product used by UK NRL-POPs for operation of its instruments and where to obtain it.
- An email was received from an OCL relating to issues with analysis of PAHs in smoked fish. The NRL-PC replied and offered to send suitable QC material to assist with method development.
- There was contact with the FSA in March 2019 over a consultation as part of the European Commission evaluation of the EU legislation on food contact materials and targeting all stakeholders group with an interest in the food contact material legislation. FCM consultation questionnaire: https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5809429/public-consultation_en
- The NRL-FCM was contacted by the German NRL to visit their laboratory and provide an overview presentation on the work carried out by Fera as the UK NRL in the area of food contact materials. Further contact occurred concerning suitable internal standards for use with methods for antioxidants by LC-MS. Advice was provided and a standard was suggested.
- There was an exchange of emails with a new member of the Latvian NRL to discuss FCM testing in general and some specifics (analysis details, types of analytes to look for etc.). Information on the next Plenary Meeting was also passed on. There was further contact regarding methods for common FCM analytes.
- Advice was provided on testing for silicone food contact articles with reference to the Framework Regulation, Council of Europe Resolution, German and French National Regulations/ Rules as well as the trade body guidance; typically release of volatiles is carried out.
- The NRL-FCM provided data demonstrating the conversion of HMTA (hexamethylenetetramine) to formaldehyde to support the quality requirements/ audit of NRL-FCM Spain. The data was derived in an FSA funded survey determining the migration of formaldehyde from melamine-ware articles.
- Advice was provided to OCLs on (i) testing bisphenol A and (ii) testing wooden utensils.

Task 5. *Keep abreast of and advise the FSA, OCLs and other relevant laboratories of developments for the sampling, testing and detection of analytes.*

Activities in this area are on-going. Fera outcomes:

- NRL-MN attended a seminar in December 2018 on microwave digestion for elemental analysis.
- An invitation was received to attend a training course run by the EURL-POPs on the determination of BFRs (PBDEs and HBCDDs) but as the NRL-POPs already had capability to perform these tests and spaces were limited Fera did not send a delegate.

- EURL-PC invited NRLs to attend a training workshop on Furan analysis. Places were limited, but oversubscribed. The NRL-PC attended the subsequent additional training workshop run by the EURL-PC.
- NRL-FCM networking with Jonathan Briggs (EU Commission) and Tim Chandler (FSA) took place at the Fresenius Conference on FCMs (Cologne, Germany).
- There was exchange of information with all NRLs on the approach to testing bagasse plates/ cups used in contact with food. The NRL-FCM recommended analytical screening and mentioned work for the FSA to prepare a literature review on biobased materials; one of the recommendations is expected to be the need for guidance for testing to ensure consistency.
- In November 2018, the International Life Sciences Institute (ILSI) workshop "How can Bioassays help to assess the suitability and applicability of TTC as a prioritisation tool for unidentified NIAS in FCMs" was attended.
- The EURL-MP sent an invitation for training on the analysis of pyrrolizidine alkaloids and Fera requested a place. Sixteen NRLs requested training so the EURL-MP approached the Commission for additional funding and consequently offered two courses for eight persons each. These took place in November 2018 with a delegate from Fera attending. A brief description of the analytical method was supplied to the FSA along with course documents.
- Preparation was started on general FCM training material that will be available to OCLs.

Task 6. *Identify and inform the FSA, OCLs and other relevant laboratories of emerging analytical issues or developments at a national, European or international level and recommend actions to address them.*

The NRL website is updated to contain this information. Specific emergent issues will be communicated directly if required and a list of contacts for OCLs is maintained to ensure that this can be achieved promptly. Information from the EURL-NRL network is used as a useful means of information exchange on this topic.

Fera outcomes:

- The NRL-POPs sent a representative to the 38th International Symposium on Halogenated Persistent Organic Pollutants (POPs) and 10th International PCB Workshop: DIOXIN 2018, in Krakow, Poland in August 2018.
- A link to EFSA's new dioxins opinion published in November 2018 was sent to the FSA (http://www.efsa.europa.eu/en/press/news/181120).
- NRL-PC gave a presentation on MCPD esters and glycidyl esters analysis at the APA annual conference.
- The FSA emailed requesting information on LOQs for MPCD, glycidyl and their esters and this was supplied. Training on analysis of 3-MCPD and glycidyl esters is due to take place in September 2019 at the EURL-PC.

11. Objective 03: Production of standard operating procedures, codes of practice and guidance documents

With the agreement of the FSA, Fera will contribute to the preparation of SOPs, codes of practice and guidance documents prepared within the EURL-NRL network and will share the information with the FSA, OCLs and other relevant laboratories.

Task 1. *Contribute to the development of SOPs, relevant codes of practice and guidance documents for use by OCLs and other relevant laboratories, as requested by the FSA.*

Fera continues to share appropriately, SOPs generated by Fera when requested by OCLs. Any new (non-confidential) SOPs, codes of practice and guidance obtained from the relevant EURL will be shared. Fera works closely with each respective EURL to contribute to these developments and to ensure that OCLs and other relevant laboratories are kept up to date.

A list of relevant tasks carried out is given below:

- Fera is project leader to develop standard methods for ergot alkaloids and aflatoxins in spices. The NRL-MP attended several CEN TC275 WG5 meetings in this period, both in person and via web-conference. The working group has been working on Mandate M520 that includes eleven projects to develop standard methods for mycotoxin analysis. These included methods for citrinin and ochratoxin A (spices and liquorice and meat) that were finalised this year. Fera worked with the FSA to review draft methods and complete comments tables. The December 2018 meeting was attended by the NRL-MP and the FSA with the main focus of the meeting was to ensure the methods for aflatoxins in spices and ergot alkaloids in cereals were ready to be submitted for CEN enquiry.
- The CEN TC327 WG5 meeting took place in Delft in December 2018 and the NRL-MP participated via teleconference. A further teleconference was held in March 2019 to discuss a document about setting criteria for methods of analysis for mycotoxins in animal feed.
- Work was ongoing at the NRL-MN for the validation of a method for methyl mercury (MeHg) analysis. The SOP and accumulated data were reviewed with a view to moving forward to accreditation.
- An OCL emailed for advice on acrylamide methodology (GC-MS column and conditions). This enquiry was as a direct result of participation in the OCL Workshop training provided by the NRL-PC in March 2018. GC-MS columns and conditions information were emailed to the OCL.
- An enquiry was received from an OCL about acrylamide methodology for coffee. A copy of the method Fera uses for coffee was sent to the laboratory as well as a report of a Method Validation Study run by the former EURL (JRC IRMM) for an LC-MS/MS method for acrylamide in coffee.

- The NRL-PC sent QC material to an OCL to assist with their method optimisation.
- The NRL-FCM requested an update from the EURL-FCM on Technical Guidelines for 10/2011 and Mineral Oils. A response was received saying that the EURL-FCM technical guidelines to support 10/2011 would be finalised in 2018 and the EURL guidelines for MOSH and MOAH: the first part (sampling + analysis) would follow; the second part (analytical method) in the second half of 2018. There was email correspondence from the FSA enquiring about MOSH/MOAH guidelines. Progress continues to be ongoing with further workshops planned for later in 2019.

  [MOSH: mineral oil saturated hydrocarbons and MOAH: mineral oil aromatic hydrocarbons].
- In December 2018 the NRL responded to an email request from the EURL-FCM to participate in an enforcement forum. The matter was discussed with the FSA.
- The NRL registered for the Task Force on Kitchenware meeting scheduled for February 2019 and received documents from the EURL-FCM. The meeting was attended at JRC Geel. An update from the Task Force meeting was received from the EURL-FCM in March 2019 with a request to review a series of documents (which were forwarded to the FSA). Comments were sent by the deadline. There was also exchange of information with the EURL-NRL Task Force on Kitchenware regarding test conditions for refillable pouches intended for use with baby/ infant foods.
- In March 2019 the NRL-FCM participated in an interview with Ecorys, the company tasked by the Commission with evaluating FCM legislation and questions (sent in advance) were discussed.
- In the early 2000's Fera carried out a number of surveys of monomers migrating from FCMs. SOPs were prepared and at the time were shared with the EURL-FCM and CEN. The CEN working group (on which the NRL-FCM was a member) developed a headspace multi-method. As the EURL-FCM are now considering multi-methods the last draft document (from 2007) was shared with the EURL as a starting point.

12. Objective 04: Compliance assessment via audits and ring trials

With the agreement of the FSA, Fera will participate in the EURL organised inter-laboratory comparison exercises and method development/ method evaluation/ method validation studies.

***Task 1**. Ensure consistency and quality of testing approaches applied by UK OCLs and other relevant laboratories, including advising on corrective action following adverse reports on OCLs from UKAS.*

This is addressed by ensuring that OCLs are familiar with the best practices and methodology support is provided with any known difficulties in application explained. Training is offered to OCLs that have little experience in a method. Performance of the OCLs in PTs is compiled and training offered in any areas for which performance is either questionable or unsatisfactory; root cause analysis outcomes are requested.

With the agreement of the FSA, Fera will continue to participate in the EURL organised inter-laboratory comparison exercises and method development/ method evaluation/ method validation studies.

***Task 2.** Plan proficiency tests for UK OCLs and other relevant laboratories as appropriate (taking into account the number of relevant laboratories), analysing and evaluating the outcome, informing the FSA and OCLs of the results and advising on further action.*

Fera has supported OCL participation in EURL PTs historically and where a need has been identified, participation in other PTs has also been encouraged. Alternatively, where there has been insufficient OCL participants to run a bespoke NRL run PT, OCLs have been registered within a Fapas® PT round. By participating in PT rounds in this way the OCLs give their permission for their performance to be shared with the NRL. Participation has often involved the APA Training Committee and further activities of this type could be undertaken with the agreement of the FSA and where there was an identified need. The NRL follows up on OCL performance.

- FSA approval was sought for OCL participation in FCCP1-OIL30 Fapas® PT 2654 for 3-MCPD Esters, Glycidyl Esters (ester-bound glycidol), 2-MCPD Esters in vegetable oil to augment capability and capacity. Due to the number of UK OCLs, a closed PT would involve the generation of statistics from a small group; participation in Fapas® allows generation of data from a much larger pool of laboratories. OCLs were contacted and offered participation. Two OCLs registered to participate. Subsequently one OCL notified the NRL-PC that their method was only for free 3-MCPD and so they were unable to supply a result. The NRL-PC contacted Fapas® to check if 3-MCPD could also be reported but it was not possible for this round and the OCL was informed. The report was received. The second OCL was contacted to follow up and assess their performance. They replied that they had been unable to participate due to instrument problems.

Task 3. *Co-ordinate the participation of UK OCLs and other relevant laboratories in EURL method validation studies and other initiatives, informing the FSA, EURL and OCLs of the results and advising on further action.*

Fera has participated in a number of method validation studies. The results of these studies are communicated to the OCLs at the Steering Group meeting, and methods are supplied on request. In some cases, where there are sufficient place, OCLs have been invited to participate.

- A Method Validation Study (MVS) for Gossypol in animal feed was run by RIKILT and the NRL-MP participated. This study was discussed at the CEN TC327/WG5 meeting in December 2018. Overall the method has been successfully validated. The draft method document will be updated and will be submitted for CEN enquiry.
- A Method Validation Study (MVS) for Alternaria toxins was organised by the Joint Research Centre (JRC), Geel. NRL-MP participated in the study. The MVS results will be presented at the CENTC275 WG5 meeting in April 2019. The report of the study is in preparation.
- A Method Validation Study (MVS) for Pyrrolizidine Alkaloids (PAs) in Animal Feed was organised by BfR. The NRL-MP participated. Work was carried out to improve the LC-MS/MS chromatography conditions using the method received from the EURL-MP (RIKILT) during the training course attended by NRL-MP.
- Method Validation Study (MVS) RIKILT PCP (Pentachlorophenol) Collaborative Study: data was submitted, results were received and these were forwarded to the FSA.
- EURL-POPs ran an interlaboratory study on the determination of chlorinated paraffins (CPs) in lard and the NRL-POPs participated. As discussed at the CWG meeting and the EURL/NRL network meeting, only five laboratories submitted results for this exercise. The study was re-opened and a new deadline of January 2019 was set. Fera participated in the exercise again. The organisers also requested that a dataset that they had acquired be interpreted by each laboratory to assess the data handling/ processing to see if laboratories were interpreting the data in the same way.

Task 4. *Participate in proficiency tests (PTs) and method validation studies organised by the EURL, informing the FSA of the results and implementing any corrective measures required.*

Fera continues to participate in EURL organised ILCs/PTs per function annually plus additional schemes such as Fapas®. Fera has procedures to investigate and to rectify unsatisfactory performance in PT schemes part of its ISO 17025 accreditation, these include ‘root cause analysis’ and improvement plans. Trend analysis of all z-scores to look for e.g. systematic bias or drift is also performed. Several of the EURLs also regularly carry out method validation studies and Fera participates where appropriate.

Task 5. *Co-ordinate training exercises to promote best laboratory practice in respect of analysis*.

Training continues to be carried out on request, either at Fera or in the individual OCL laboratories. Training at Fera allows many OCLs to be trained at the same time giving economies of scale and the opportunity for interaction.

Fera staff continue to contribute to the MChemA training course and all presentations given and other materials will be made available both on the APA training website and on the Fera NRL website. Fera staff have also been invited to present at the APA annual conference.

- EURL-MP-01 PT for Deoxynivalenol (DON), 3-Acetyl DON, 15-Acetyl DON, and DON-3-glucoside: results were requested adjusted for a moisture content of 12% (as per the EU Regulations for animal feed). Samples were analysed and reported. Fifty laboratories reported results for DON but the reported results showed that there are few NRLs (less than half) carrying out analysis for 3-Acetyl DON, 15-Acetyl DON and DON-3-glucoside. The results were discussed at the EURL-MP Workshop. The report of the PT was supplied to the FSA and slides from the Workshop were supplied to the FSA.
- NRLs were informed at the EURL-MP workshop that EURL-MP PT 2018 pyrrolizidine alkaloids test material homogeneity testing was underway and a PT for pyrrolizidine alkaloids would take place in 2019. The results from the PT will be reviewed at the next Workshop in October 2019.
- EURL-MN PT-2018-01 "Determination of the mass fractions of Ni, Cd, Pb, Hg, As, iAs in mixed corn poultry feed" was participated in. Samples were analysed for '% Moisture' and all indicated mass fractions. There were technical issues with the reporting website, these were resolved and data was reported. NRL-MN contacted the EURL-MN with feedback on the PT report.
- Samples for EURL-MN PT-2018-02 "Determination of the mass fractions of Ni, Cd, Pb, Hg, As, iAs in chili powder" were analysed and reported. The results were discussed at the 2018 EURL-MN Workshop. Fera provided feedback for the PT report.
- In March 2019, the EURL-MN provided information on three PTs for 2019:
    - EURL-MN PT-2019-01 for seaweed meal
    - EURL-MN PT-2019-02 for vegetable based baby food
    - EURL-MN PT-2019-03 for offal.
- EURL-Halogenated POPs PT on Determination of Dioxin-like Compounds in Oil by Bioanalytical Screening Methods 2018 [EURL-PT-DP_1803-EO]: Although the NRL-POPs did not participate in this PT as the NRL does not use bioanalytical screening methods, reports were received and forwarded to FSA.
- The POPs in Food PT (Norwegian Institute) occurs annually. Results for the 19th round were submitted and the preliminary report was received and shared with the FSA. The final report for the Interlaboratory Comparison of the Determination of POPs in Food was published in December 2018 and made available at http://www.fhi.no/ilc. Fera also participated in the 20th Round of the Interlaboratory Comparison of POPs in Food, organized by the Department of Environmental Exposure and Epidemiology (former Department of Exposure and Risk Assessment) at the Norwegian Institute of Public Health (NIPH), Oslo, Norway. Results are due after the reporting period of this report.

- EURL-POPs PT soybean meal (feed): the NRL took part with preliminary and final reports received and forwarded to the FSA. A certificate of participation and a final report addendum were subsequently received.
- EURL-halogenated POPs PT on the determination of PCDD/Fs, PCBs, PBDEs and HBCDDs in Beef 2018 was participated in with preliminary results and final report received and forwarded to the FSA.
- 4th Round of interlaboratory assessment of POPs laboratories - IL2018-POP - UNEP Stockholm Convention GMP context - halogenated POPs PT organised by UNEP and University of Örebro (participation fee for PFAS analyses paid by the EURL). Samples were fish and human milk. It was raised with the EURL that not enough sample to do all the analyses had been received so Fera analysed the samples for dioxins, PCBs, PBDEs, and PFAS (not HBCDDs). The samples were extracted, analysed and results submitted on the deadline.
- EURL-POPs PT for dioxins/PCBs/PBDEs/HBCDDs in grass: Fera NRL-POPs received instructions and samples for the PT and analysis was started; results are due to be reported in April 2019.
- EURL-POPs PT on the determination of PFAS in Wheat Flour instructions and sample were received with a deadline beyond this report.
- EURL PT PC-2018-001 was the determination of acrylamide in bread matrix following the benchmark level as defined in Commission Regulation (EU) 2017/2158 of 20 November 2017. The NRL-PC submitted data. NRL and OCL participation was agreed with the FSA. Results were submitted and the draft report was received.
- Herb and Supplement PT materials were received from RIKILT (The Netherlands) for method evaluations by the NRL-PC.
- A completed form with laboratory information was sent to the EURL-PC as requested to register for EURL PT 2019 PAHs in food supplements.
- EURL-FCM PT 2018: FCM-18-01 Determination of oligomers in food simulant D1. More information was received from the EURL on the oligomers (all cyclic poly(ethylene terephthalate) PET oligomers) and a potential method of detection. Samples were received, tested and results were reported via the EURL web portal. The preliminary report and final reports were received.
- EURL-FCM PT 2018: FCM-18-02 Determination of the mass fraction of total Al, Ni, Sb and Zn in food simulant B information was received from the EURL. Analysis was carried out on replacement samples and results were submitted. The draft report was issued and discussed at the EURL-NRL meeting; the final report was provided with the October 2018 plenary meeting note.

13. Objective 05: Co-ordination within the UK of EURL initiatives

All information and documentation received from the EURL will be provided to the FSA and, where appropriate, to the OCLs and other relevant laboratories.

Task 1. *Co-ordinate the implementation of EURL recommendations related to the standardisation of testing methods across the EU.*

Information and documentation received from the EURL will be provided to the FSA, to the OCLs and where appropriate other relevant laboratories. Any EURL recommendations have been fed back promptly to the FSA, OCLs and other relevant laboratories via the NRL website and any specific issues will be disseminated by e-mail to the OCL distribution list.

A list of relevant tasks carried out is given below:

- EURL-FCM PT 2018: FCM-18-01 Determination of oligomers in food simulant D1: details were circulated to OCLs for participation.
- EURL-FCM PT 2018: FCM-18-02 Determination of the mass fraction of total Al, Ni, Sb and Zn in food simulant B: details were circulated to OCLs for participation.
- In June 2018 the NRL-MN contacted the EURL-MN to clarify if the forthcoming EURL PT rounds would be for the NRLs only or would be made available to OCLs. The EURL replied that the two rounds planned for 2018 would be for the NRLs only but future rounds may be open.
- FSA approval was sought in June 2018 for OCL participation in EURL-PC PT acrylamide in bread PC-2018-001 due to start in September 2018.
- UK OCLs were emailed in June 2018 encouraging them to take part in the EURL-POPs proficiency test on the determination of PCDD/Fs, PCBs, PBDEs and HBCDDs in Beef 2018.
- OCLs were forwarded the invitation to participate in the RIKILT EURL-MP PT for HCN. It was explained that the NRL/FSA would pay their registration costs. OCLs were asked to register directly with the EURL-MP and inform the NRL they had registered. Only one OCL would have liked to participate but they currently do not have the method capability; no UK OCLs registered to take part.
- In September 2018 following communication from the EURL- POPs regarding PFAS analysis, a link to a survey was forwarded to the UK OCLs and they were encouraged to complete it.
- An invitation was received in December 2018 from the EURL- POPs to take part in a PT for dioxins/PCBs/PBDEs/HBCDDs in grass. The invitation was forwarded to OCLs requesting responses in time to meet the registration deadline. No responses were received.

- The EURL-POPs also sent, in December 2018, an invitation to participate in a PT on the determination of PFAS in Wheat Flour 2019. The invitation was forwarded to OCLs but there were no responses.

14. Objective 06: Communication of results and data use

All results and work carried out will be reported to the FSA at regular intervals. Annual reports will be published on the Fera NRL website.

a) Updates relating to developments in core functions were emailed as they arose to the relevant FSA contact in each policy area and the FSA manager for Contaminants NRLs.

b) Costs, specifications and timings were tracked and the FSA was kept updated.

c) The FSA would have been emailed immediately if unusual occurrences had resulted from core functions of the NRL.

d) Fera annual work programmes for each NRL area were provided.

e) After each EURL workshop, working group or other meeting, a meeting note was provided to the FSA by email.

f) The NRL website was updated in line with a corporate revamp of the Fera website.

g) Fera NRLs uphold confidentiality with work for all customers including the FSA.

h) Fera NRLs only use data with FSA permission.

i) Fera maintains records for the required retention times.

j) Reports and information are regularly sent to the FSA and can be transferred as necessary at the end of a contract period.

15. Deliverables and Conclusion

Fera has provided the FSA with monthly NRL Activity Logs.

EURL/NRL Workshops have been attended and Meeting Notes, official reports and presentations have been provided by the NRLs to the FSA.

EURL Working Groups, Task Forces and AdHoc committees that the NRLs participate in have also been followed up with Meeting Notes, official reports and documents and where available, presentations and these were sent to the FSA.

Fera has provided Meeting Notes from its attendance at CEN Working Groups and has provided active assistance to the FSA in reviewing, commenting and voting on documents from CEN / BSI.

An Annual Report will be published annually on the Fera NRL website thereby meeting the FSA openness and transparency commitments.

Additionally, Fera provides the FSA with the individual respective EURL work programmes (when these are provided by the EURL).

In summary the NRL participated in 14 PTs: two mycotoxins and plant toxins, two metals and nitrogenous compounds, seven POPs, three processing contaminants and two FCM. There was involvement in the final stages of PTs from the preceding year and planning for the following year.

16. References

Commission Decision of 27 October 1997 Fixing the levels and frequencies of sampling provided for by Council Directive 96/23/EC for the monitoring of certain substances and residues thereof in certain animal products. 97/747/EC. OJ L 303, 6.11.1997, p. 12–15. ELI: http://data.europa.eu/eli/dec/1997/747/oj

Commission Decision of 23 February 1998 laying down detailed rules on official sampling for the monitoring of certain and residues thereof in live animals and animal products. 98/179/EC. OJ L 65, .3.1998, p. 31. ELI: http://data.europa.eu/eli/dec/1998/179/oj

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Appendix 1: EURL Contact Information

Contaminant	EURL
Mycotoxins and Plant Toxins in Food and Feed	**European Union Reference Laboratory for Mycotoxins and Plant Toxins in Food and Feed** Wageningen Food Safety Research (previously RIKILT) Wageningen Campus, Akkermaalsbos 2 (building 123), 6708 WB Wageningen Tel.: +31(0)317 480 318 E-mail: eurl.mycotoxins-planttoxins@wur.nl Website: https://www.wur.nl/en/Research-Results/Research-Institutes/rikilt/Reference-laboratory/European-Union-Reference-Laboratory-1/EURL-mycotoxins-plant-toxins.htm Operating Manager: Monique de Nijs
Heavy Metals and Nitrogenous Compounds in Feed and Food	**European Union Reference Laboratory for Heavy Metals in Feed and Food** National Food Institute, Technical University of Denmark Kemitorvet Bygning 202 DK-2800 Kgs Lyngby Denmark Tel.: +45 93 51 88 57 E-mail: EURL-MN@food.dtu.dk Website: http://www.eurl-mn.eu/ Operating Manager: Jens J. Sloth
Halogenated POPs in Feed and Food	**European Union Reference Laboratory for Dioxins and PCBs in Feed and Food** c/o State Institute for Chemical and Veterinary Analysis (CVUA Freiburg) Bissierstrasse 5 D-79114 Freiburg Germany Tel.: +49 761 8855 500 E-mail: info@eurl-freiburg.eu

	Website: http://www.crl-freiburg.eu/dioxin/index.html Dr. Rainer Malisch (Director)
Processing Contaminants	**European Union Reference Laboratory for Processing Contaminants** National Food Institute, Technical University of Denmark Kemitorvet Bygning 202 DK-2800 Kgs Lyngby Denmark Tel.: +45 35 88 70 00 E-mail: EURL-PC@food.dtu.dk Website: http://www.eurl-pc.eu/ Operating Manager: Arvid Fromberg
Materials and Articles in Contact with Food	**European Union Reference Laboratory for Food Contact Materials** European Commission Directorate General Joint Research Centre Directorate F – Health, Consumers and Reference Materials Unit Food and Feed Compliance Food Contact Materials Group TP 260 Via E. Fermi 2749 I-21027 Ispra (VA) Italy Tel.: +39 0332 785319 E-mail: JRC-FCM@ec.europa.eu Website: https://ec.europa.eu/jrc/en/eurl/food-contact-materials Operating Manager: Eddo Hoekstra

Appendix 2: Fera NRL Contact Information

Area	Name and Contact Details
General enquiries and information	Fera Science Ltd Sand Hutton York YO41 1LZ Tel: +44 (0)1904 462000 Website: https://www.fera.co.uk/national-reference-laboratory E-mail: nrl@fera.co.uk
Head NRL Chemical Safety in Food and Feed	Susan MacDonald Tel: +44 (0)1904 462558 E-mail: susan.macdonald@fera.co.uk
Mycotoxins and Plant Toxins in Food and Feed NRL	Susan MacDonald (as above) Website: https://www.fera.co.uk/about-us/national-reference-laboratory/mycotoxins
Heavy Metals and Nitrogenous Compounds in Food and Feed NRL	Mike Walls Tel: +44 (0)1904 462150 E-mail: michael.walls@fera.co.uk Website: https://www.fera.co.uk/about-us/national-reference-laboratory/heavy-metals
Halogenated POPs in Feed and Food NRL	Frankie Smith Tel: +44 (0)1904 462525 E-mail: frankie.smith@fera.co.uk Website: https://www.fera.co.uk/about-us/national-reference-laboratory/dioxins-pcbs

Processing Contaminants NRL	Sean Panton Tel: +44 (0)1904 462098 E-mail: sean.panton@fera.co.uk Website: https://www.fera.co.uk/about-us/national-reference-laboratory/pahs
Materials and Articles in Contact with Food NRL	Claire McKillen Tel: +44 (0)1904 462609 E-mail: claire.mckillen@fera.co.uk Website: https://www.fera.co.uk/about-us/national-reference-laboratory/food-contact