

News story: GC team delivers successful annual postgraduate training course

Introduction

The Government Chemist Team organised and delivered, on behalf of the Association of Public Analysts Educational Trust, the annual week-long course 'Analysis and Examination of Foods' at the University of Reading. The course is fully residential and ran between Monday 3rd and Friday 7th April 2017.

This course covers the analysis and examination of food by chemistry, molecular biology, microscopy, microbiology and mycology. It aims, in a two year cycle, to support the syllabus for the Mastership in Chemical Analysis (MChemA) which is the statutory qualification required to practice as a Public Analyst. Hence, as well as food, it addresses drinking water, feedingstuffs, fertilisers, and the underpinning legislation controlling this wide subject matter.

It is the only dedicated formal teaching available to MChemA candidates and is pitched at postgraduate level. It needs to fulfil the following aims:

- provide the novice an opportunity to get to grips with the subject matter of the syllabus
- enable the experienced analyst to discuss finer points of practice with experts
- provide a valuable opportunity for scientists to update their current experience and perhaps consider further study.

The course has been held for many years at the University of Reading. Daytime and evening lectures, interactive sessions and overnight accommodation were in the Cedars Conference Centre. Practical sessions on microscopy, microbiology and mycology were held in laboratories in the Food Biosciences Department.

Who attended the course

Thirteen delegates, all experienced scientists attended the course. While most were from UK Public Analyst Laboratories, there were also two scientists from Gibraltar and one from the Hong Kong Special Administrative Region, China. All delegate feedback was overwhelmingly positive:

Very good lecturers, entertaining, relevant and informative

Always an eye-opener and thoroughly enjoyable

Improved my confidence with a microscope

Brilliant way of learning, very informative, enjoyable and well planned

Interesting for understanding the wider implications of our work

Summary of the course material

The 'Analysis and Examination of Foods' course offers a highly effective learning experience with a good mix of lectures, laboratory practical sessions and interactive exercises delivered by a wide range of experts, not usually available together elsewhere. The topics are up to date, covering safety (chemical and microbiological), authenticity, analysis and the law of food, water, feeding-stuffs and fertilisers.

The course has RSC 'approved training' status and is aligned with the MChemA syllabus. The sessions are delivered in the classroom and include practical training in microscopy and microbiology. There are also interactive exercises including 'expert witness' role play mentored by experienced court-going scientists.

The course started with Dr David Owens on practical mycology – fungal classification and identification. Professor Anne-Marie Minihane presented a fascinating insight into nutrition: research, labelling and impact on our personal lives.

Public Analysts need to interpret and communicate their results, often to a court of law. Dr Duncan Campbell MChemA carefully taught delegates best practice in doing so, with regard to forensic probity, brevity and transparency.

Dionisis Theodosios of Eurofins taught a session on the regulation of pesticides residues in food, and analysis with much emphasis on modern techniques and interpretation of results. Jon Griffin MChemA and Kevin Wardle MChemA led the delegates through the law, analytical procedures and exercises in appraising commercial products and results of analysis.

Hazel Gowland, an experienced patient advocate and published researcher, led delegates through the impact of food allergies on patients' lives and allergen risk management. Dr Walker outlined the immunological basis of

allergy and the latest analytical methods for food allergen detection.

In the wake of the horse meat scandal and the Elliott Review, food authenticity, food fraud and food crime continue to have a high salience. Thus four sessions were devoted to these topics. Giles Chapman Strategic Intelligence Manager, National Food Crime Unit, NFCU, Food Standards Agency gave an insightful overview of the operation of the NFCU. Nigel Payne MChemA, Chair of the Authenticity Methods Working Group, covered the authenticity, contaminant and residues aspects of meat and fish. Dr Sophie Rollinson surveyed the history, current approaches and future challenges of the Defra Food Authenticity Programme and Dr Gavin Nixon delivered a thorough and systematic review of advanced DNA and Spectral Imaging techniques for food authenticity.

Gavin Nixon, GC team, delivering a session

A major part of this year's course was microscopic identification of food components and contaminant material. A comprehensive theory session and practical training ensured delegates were comfortable using the microscope, made use of appropriate mounting media and recognised key structural features. The systematic examination of blind mixtures gave the more experienced a foretaste of the MChemA exam 'Part C' scenario questions. The practical sessions were led by Jane White MChemA with teaching from Sue Sherry in Plant Anatomy. This was enhanced by a lecture on consumer complaints from Alastair Low MChemA who presented numerous examples in an interactive session and also assisted as an instructor in the practical sessions.

Dr Alex Kersting and Rachael New MChemA talked delegates through the process of taking the MChemA exam and how to study for this exacting qualification and the Chief Examiner Jon Griffin MChemA was on hand to outline what the examiners are looking for in a good candidate.

Taking advantage of the expertise of the delegates themselves, a mini-symposium was held allowing delegates to learn from each other. Dr Angella Wing-Hoi Yuen described the work of the Hong Kong Government laboratory, Alison Aitken discussed Shiga toxin producing E.coli, Punil Sanatcumar outlined the analysis of PCBs and dioxins, Nikki Molloy gave insights into the preparation of material for proficiency testing schemes and Ratna Dewiyanti spoke entertainingly on the science behind home cooking. Natalie Hernandez and Xenia Duarte discussed medical microbiology and haematology in a busy hospital lab in Gibraltar, Chris Payne and Peter Bowdery described integrated public analyst and police forensic science services and David Finlay and Diane Bryning outlined protection of animal feed supply chain and sustainable entrepreneurial recycling respectively. This mini-symposium worked well to share knowledge and experiences and build professional relationships.

Acknowledgments

The APA Educational Trust is grateful to the Food Standards Agency and the Analytical Chemistry Trust Fund for financial support and to the Government

Chemist team for organising and running the event. Grateful thanks are extended to the speakers and practical session demonstrators for the care and effort they put in to preparing and delivering their material, and to the technical and administrative staff of the University of Reading for their kind assistance in making the course run smoothly.