

Conference focuses on setting standards in food analysis

The British Government Chemist recently hosted a two day conference in London, UK, on Setting Standards in Food Analysis that aimed to bring together the main players in regulatory policy development and cutting edge measurement science.

The meeting was held in the famous Churchill Museum and Cabinet War Rooms and was supported by The Food Standards Agency, Leatherhead Food Research, Campden BRI and LGC (Laboratory of Government Chemist) Standards.

In his opening address Dr Derek Craston, Director of Science and Technology and Government Chemist at LGC, highlighted how LGC has statutory duties under seven British Acts of Parliament including the Food Safety Act 1990 and the Agriculture Act 1970, which focus on protecting public safety, health, value for money and consumer choice. Several of these duties relate to the sampling and analysis which may precede enforcement action against a business operator.

Hazardous substances

He also highlighted how the Government appoints LGC to provide wide ranging advice on the way analytical science links into policy, standards and regulation, especially in relation to potentially hazardous substances.

Michael Walker, also from LGC, reviewed LGC's role in referee casework that usually relates to retained samples kept by an authorised officer under Section 31 of The Food Safety Act 1990 as detailed in legislation such as the Food Safety (Sampling and Qualifications) Regulations 1990 and devolved equivalents and also under EU law in accordance with Supplementary Expert Opinion Article 11(5) of 882/2004.

If formal sampling is occurring in the UK three samples should be taken – one for the owner of the food business, one for public analysis and interpretation and one which is retained for the Government Chemist for independent referee analysis should this be required.

Aflatoxin is the most frequent source of referee cases and cases involving fig paste and almonds were highlighted. Other inter-

esting involvements have been with meat and bone meal (MBM) in animal feeds in the context of BSE, nitrofurans in prawns and authenticity of basmati, GM flax seeds and dimethyl yellow in turmeric.

Michael summarised the benefits of LGC's involvement as:

- Maintenance of sample integrity.
- Giving traders the right of analytical appeal.
- Saving on legal costs when both parties agree to settle on the grounds of sound science.

Malcolm Burns from Birmingham University highlighted the role of digital PCR and other cutting edge technologies used in food authenticity analysis and in allergen detection. He stressed that although such methods show great analytical potential, objective evidence needs to be supplied to prove their 'fitness for purpose' for routine use in food authenticity testing.

Thomas Linsinger from the Institute for Reference Materials and Measurements (IRMM) then considered ensuring measurement quality during food crises when quick answers are being sought. He did this by highlighting examples including the recent melamine crisis, which was compounded by some countries determining total nitrogen rather than proteins and this led to a need to provide reliable methods for detection.

Nigel Harrison, Head of the Standards, Authenticity and Food Law Policy Branch of the FSA reviewed his agency's Food Authenticity Programme and, in so doing, identified three key areas of activity – research, surveys and technology transfer.

Professor E. Ellen Billett of Oxford University spoke on a proteomic approach to the detection of offal in meat products that focused on heart, liver, kidney and lung from cattle, pigs and sheep and how potential offal specific protein biomarkers have been identified. Their methods can detect specific offals at low levels in both raw and cooked products, including processed meat products such as haggis, sliced liver sausage and dog food.

Dr Hez Hird from the Food and Environment Research Agency (FERA) reviewed the use of DNA methods for food authentication and how different methods are particularly suited for specific applica-



tions.

For example PCR has been found to be excellent for the identification of species and the differentiation of varieties, neither of which can easily be achieved using other technologies.

Dr Simmion Kelly, also from FERA, discussed the fascinating subject of tracing the geographical origin of beef by using bio-element isotope and trace element analysis. This is useful to protect the various British Protected Denomination of Origin products, such as Orkney beef, and Protected Geographical Indication products, such as Welsh beef. It also helps in the detection of mislabelled counterfeit third country products.

However, it was highlighted that confounding factors such as imported feed, animal transportation and tissue turnover times do occur!

Speciation of gelatine

Helen Grundy, also from FERA, reviewed the rapid detection of gelatine peptides from a wide range of organisms and how this technology can be used to identify mixed species products, for example the use of bovine or porcine gelatine in chicken products.

Andy Kerridge, director of quality assurance with Burger King EMEA reviewed some of the challenges his company faced bringing in a quality assurance programme across Europe, Middle East and Africa similar to one they had successfully introduced in the USA earlier.

He highlighted the lack of compatibility between many US and European testing methodologies and issues associated with

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range specifications and what is achieved in reality, for example interesting differences in fat contents between suppliers.

Problems have been identified in the number of different languages across the region, shipping of products for centralised testing in the UK and sample preparation. For example, there can be a 2% loss in moisture content as product passes through a blast freezer, which are notorious havens for *Listeria monocytogenes*, and so difference will occur depending on whether you sample products before or after blast freezing.

Anthony Bagshaw from Leatherhead then addressed the issues associated with vitamin analysis focusing on the sample, the test method and the result and its interpretation.

He highlighted the differences in the definition of vitamin A between Europe and the USA and the difference in labelling requirements between these two areas. This means testing could depend on the product's ultimate market.

Joanne Topping, also from Leatherhead, then discussed lecithin arrays for identifying the species of origin for milk samples. This could be very important, for example, in relation to the production of *Mozarella di bufala* which must be made from 100% buffalo milk (some four times more expensive than cow's milk). The same technology can also be used to differentiate between premium speciality products such as goat and

sheep milk.

Kathy Groves, another scientist from Leatherhead, then looked at microscopy as a means of identifying Mechanically Separated Meat (MSM) and how this work has produced a method that now enables public analysts to differentiate this product from true meat.

The method is also used by industry to help companies determine whether their product can be classified as MSM or desinewed meat.

Validation methods

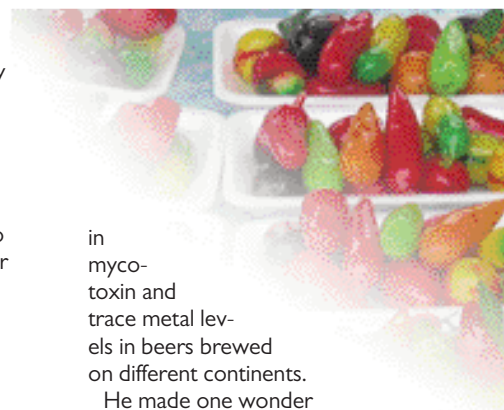
The issue of validation methods outside accreditation was addressed by Campden BRI's Paul Drake. These are needed in situations such as for tests that are not routinely performed or for tests dealing with a newly arising issue.

He stressed that any test must be fit for purpose within its detection limits, must be reliable and its potential interferences must be known and accounted for.

Roy Betts, also from Campden BRI, stressed that if there are legal difficulties to interpretation these will negatively impact on the number of methods available and the development of methods.

Richard Sharpe, again from Campden BRI, looked at the role of analysis in due diligence within the brewing industry.

He highlighted some fascinating differences



in myco-toxin and trace metal levels in beers brewed on different continents.

He made one wonder whether one should abstain from libation when travelling in China or Africa!

Matthew Whetton from LGC spoke about animal feeds and how their regulation is designed to ensure that potentially dangerous contaminants, such as PCBs, heavy metals, mycotoxins and veterinary drugs, are either not present in animal feeds or are within acceptable levels as such contaminants can be passed on to man via the products produced by the animals.

In the concluding presentation Yuk Y. Cheung from UKAS highlighted the importance of results being traceable to recognised standards, thereby allowing the users of testing/analytical services to make informed decisions, in relation to food safety, security and authenticity, with confidence. ■