



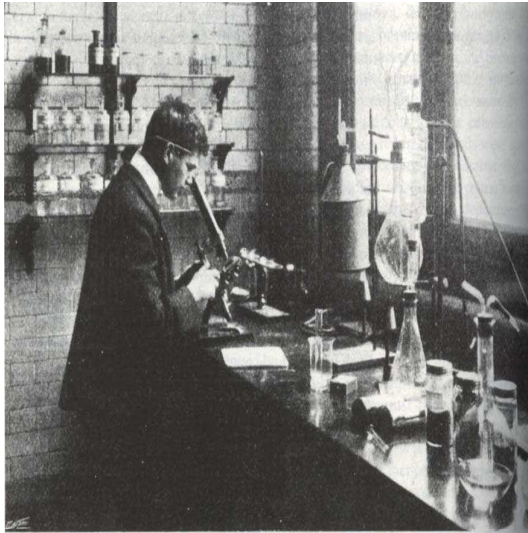
Measurement science and technology for effective regulation

Derek Craston, Government Chemist

Science
for a safer world



Measurement Science: National Roles

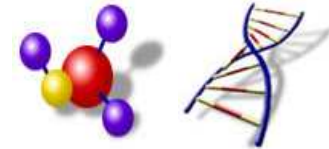


Government Chemist

- Referee Analyst (4 Acts of Parliament)
- Adviser to government and industry on regulations & scientific input



National Measurement Institute (NMI)



- Provides traceable and accurate standards of measurement for use in industry, academia and government



Alignment between regulation and measurement



- Many regulations set limits on chemicals; require full product description; link product composition/form with safety and risk
- Measurements:
 - Demonstrate product limit compliance
 - Demonstrate authenticity
 - Underpin safety/risk evaluations



GC Programme Activities



Public consultations

Home Office	Consultation on new statutory powers for the forensic science regulator
Department for Transport	Specifying a limit for amphetamine in regulations for the new offence of driving with a specified controlled drug in the body above the specified limit – A consultation document
European Commission DG Health	Public consultation on fragrance allergens in the framework of Regulation (EC) No. 1223/2009 of the European Parliament and of the Council on cosmetic products.
Defra/Welsh Government	Water Framework Directive implementation in England and Wales: new and updated standards to protect the water environment
Maritime and Coastguard Agency	Consultation on the draft Merchant Shipping (Prevention of Air Pollution from Ships) and Motor Fuel (Composition and Content) (Amendment) Regulations 2014 implementing EU Directive 2012/33/EU on the sulphur content of marine fuel
European Food Safety Authority	Consultation on the evaluation of allergenic foods and food ingredients for labelling purposes, by the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA)
Health and Safety Executive	Guidance - Fumigation: Health and safety guidance for employers and technicians carrying out fumigation operations (HSG251) - Revised draft for information and comment
European Commission DG SANCO	Public consultation on guidelines relating to the provision of information on substances or products causing allergies or intolerances as listed in Annex II of Regulation (EU) No 1169/2011 on the provision of food information to consumers

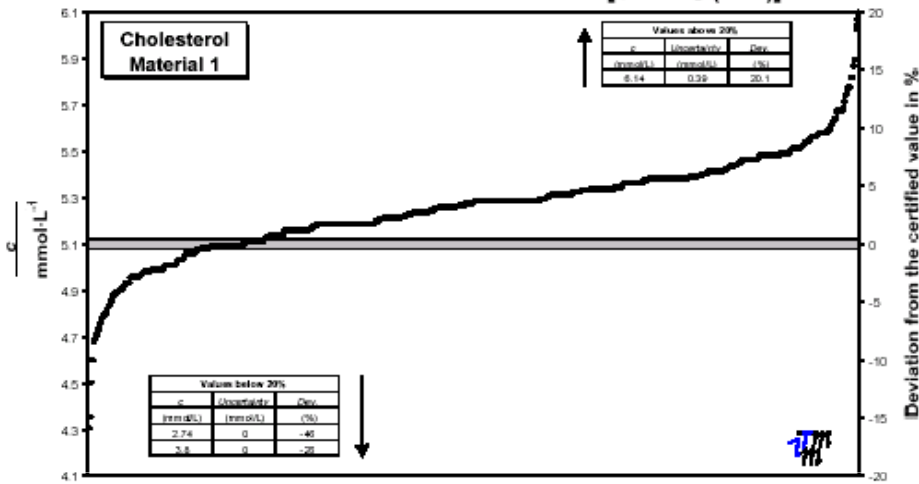
Micro studies

- Determination of polybrominated diphenylethers (PBDEs) in environmental water samples.
- Identification of sustainable timber
- Desk study looking at the current and proposed priority hazardous substances in the Water Framework Directive and its daughter directives
- A method to differentiate the ionic form of silver from the nanoparticulate form in the environment.

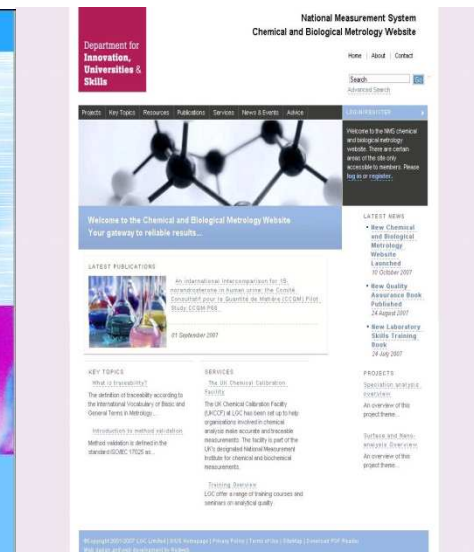
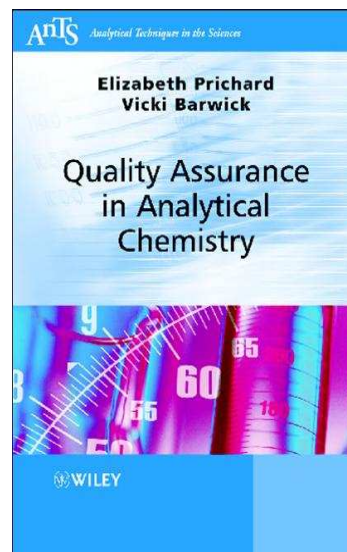
Measurement quality



IMEP-17: Trace and minor constituents in human serum
 Certified value : $5.111 \pm 0.021 \text{ mmol}\cdot\text{L}^{-1}$ [$U=k\cdot u_c$ ($k=2$)]

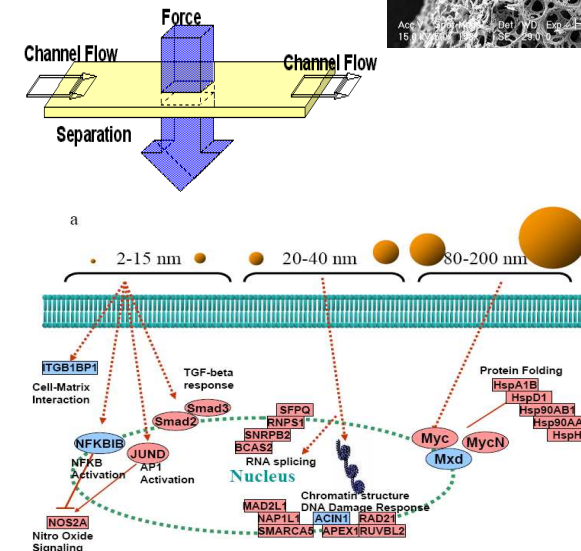
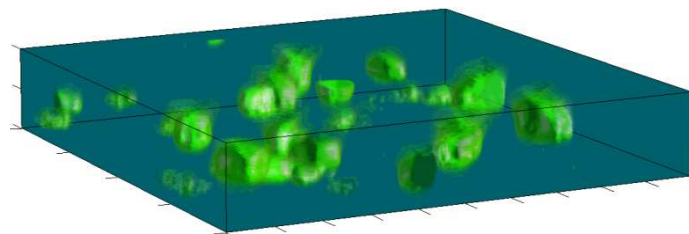
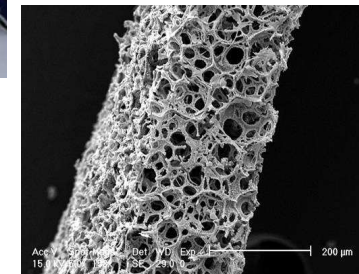
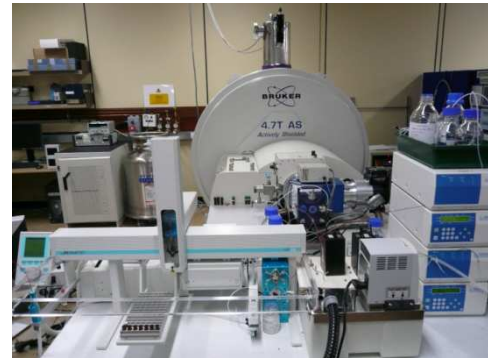


Results from all participants (991 laboratories)



Measurement :REACH & CLP

- Identity, form and amount
- Toxicity
 - Cell base assays
 - Nanotoxicology
 - Speciation
- Fate
 - Metabolism (In-vitro methodology)
 - Metabolite identification



Where can we help?



- Final registration deadline is June 2018 for substances manufactured/imported in quantities great than 1 tonne
- In 2015 revised REACH Annexes should be published: likely to specifically cover nanomaterials
- New REACH restrictions are implemented every year. E.g. Chromium (VI) compounds in leather goods and Polycyclic Aromatic Hydrocarbons (PAHs) in consumer articles

Where will there be needs for standards, methods or training?

The Government Chemist blog:

<https://governmentchemist.wordpress.com/>

and the Government Chemist website:

<https://www.gov.uk/government/organisations/government-chemist>