The MicroAnalyst

The Newsletter of the
Royal Society of Chemistry
Analytical Division
MicroAnalytical Group

Issue Number Fourteen
• August 2009 •

Dear Colleague,

Welcome to this edition of our bi-annual Newsletter….

It has been an eventful year least of all with the sad and tragic death of our Microanalytical Group Auditor Bill Hill who will be dearly missed.

On Group news we welcome Dr Robert Packer to the Committee and it is hoped you will meet him at our Microanalytical Forum this September 2009 at the University of York, please do try and attend as it is a great opportunity for us to meet, discuss and share views with you our Members, as always we welcome your input and comments. The Group contact and website addresses are to be found on the back page of this Newsletter.

We are in the process of launching MicroCheck. A means to help you evaluate the precision of your routine CHN analyses as a member of an interlaboratory testing scheme. Estimated costs are ~£150 per year with a sample for testing dispatched every 6 months. To register an interest in joining the scheme please contact us (see back page for details).

Hoping to see you all in York come September.

Alan Jones.
Committee Member,
Microanalytical Group.

Microanalytical Forum

Department of Chemistry, University of York
Tuesday 22nd September 2009

£**50** Members, £**70** Non-members, £**20** students and unwaged.

Please complete enclosed registration form and send to Ms. Louise Dixon (Contact details for registration and further information are on back page). Directions to the venue are available upon request.

Do we eat soil?

Joanna Wragg,
British Geological Survey

In 2002 guidance was published concerning the assessment of risks to human health from land contamination (Department for the Environment Food and Rural Affairs and the Environment Agency, 2002a). Prior to this, the assessment of possible risk to human health from toxic elements present in soils was largely based on the ICRCL trigger levels (Interdepartmental Committee on the Redevelopment of Contaminated Land, 1987) or on the SNIFFER RBCA risk human assessment model. Under the guidelines, there is a need to consider whether the presence of the contaminant justifies taking remedial action or a more detailed risk assessment if the representative soil contaminant concentration is above the Soil Guideline Value. In assessing risk, the use of total contaminant concentrations provides a conservative estimate, because it assumes all of the contaminant present in the soil can enter the bloodstream. However determining the amount of a contaminant that can enter the bloodstream (bioavailability) on a site-specific basis is an option for the revision of the exposure estimates (reduction of the 100% conservative estimate) to the potential receptor, which would more realistically reflect the conditions at the given site (Kelley *et al.*, 2002).

There are three routes of entry considered in terms of human health risk assessment for contaminants present in soil. These are the oral/ingestion, dermal and respiratory exposure routes (Paustenbach, 2000). Whether the presence of contaminants in soil pose an unacceptable risk to human health or not is dependant on the potential of the contaminant to be mobilised/or leave the soil and enter the human bloodstream. For arsenic, a main contaminant of concern in the UK, the main exposure route is the oral exposure or soil ingestion pathway. Through incidental soil ingestion, adults can consume between 20 and 100 mg of soil per day, for toddlers this amount can increase to 400 mg of soil per day. Incidental ingestion events can include, simple hand to mouth action after playing in the garden or gardening or eating soil attached to vegetables.

Determination of bio availability, or the amount of contaminant that can be mobilised from the soil and enter the bloodstream can only be measured in-vivo, or in animal models. This type of measurement is ethically challenging, time consuming and expensive to carry out on a site specific basis. As such, in-vitro surrogate testing methodologies that simulate the physiological and chemical conditions in the human gastro-intestinal tract have been developed in order to assess the risk from contaminants to humans at contaminated sites.

The presentation discusses the current UK guidance associated with the assessment of risks to human health from accidental soil ingestion; the laboratory methods that have been developed to assess if the presence of contaminants in soil pose an unacceptable risk to human health because of the potential of the contaminant to be mobilised/or leave the soil and enter the human bloodstream; and the methodologies that are available to determine the source apportionment of the contaminants present in the soil.

In Memoriam

William Henry "Bill" Hill
14th June 1931 – 24th April 2009

Bill was born on the 14th June 1931 in Whitechapel London. Before the War he was a sickly child and went by tram every week to Great Ormond Street Hospital for treatment to remedy the effects of London's pollution.

During the War he was evacuated to Cornwall. Life on Skewes Farm was healthy and he never had a day's illness there. So Cornwall became his spiritual home. His "auntie" Joan taught him to cook and it became a hobby.

Running two miles to Praze Primary School, and later over the fields to the station for Helston Grammar School gave him another hobby. He became quite successful in middle distance running – representing his county and university. In 1952 he was invited to run in the 1500m in Berlin (he really preferred the 5000m) and found himself running against Emil Zatopek.

Bills scoutmaster and teacher at Helston introduced him to chemistry, but the nearest that National Service in the RAF could get was "stats clerk". The two years were unremarkable except that he learnt how to present data correctly.

The Metal Box Company snapped him up in 1954 as soon as they knew he had studied at the Sir John Cass College under David Wilson, who became a good friend. He worked there for over 41years, and retired as their expert on Trace Metal Analysis. He was co-author on a book on Tinplate analysis and highly regarded in his field, and well known internationally through the RSC. Even in retirement he still attended meetings and enjoyed chatting with students about their research.

Louise first met Bill as a teenager and they worked together for 34years at Metal Box. She recalls that among the dozen in the lab. she was surprised that he even noticed her. He liked the way she worked and included her on several of his research projects. Later he introduced her to the RSC and eventually persuaded their bosses to let her take over from him on one of the committees. His encouragement in her career resulted in her becoming secretary to two committees and a member of the Analytical Council.

He trained other youngsters in the lab. Many went on to great things and he remembered them all. Such was his desire to share knowledge he taught a few to play Bridge and other card games.

After his retirement in 1996 he kept in contact with the chemistry section and offered Louise support when she was made redundant six months later. He was thrilled when he learnt that Louise had secured a position at Butterworth Laboratories, having known Doris Butterworth many years earlier this gave him the opportunity to renew his friendship.

Bill was a kind, generous and loving man, of great character. "I have enjoyed working with Bill for so many years and happy to have been his wife these last seven" says Louise.

Committee Member Profile

Dr Robert Packer

I graduated from the University of Kent in 2004 getting an MChem in Chemistry and an award by the Rotary Club. Despite enjoying my research Masters year I decided resolutely to move to industry and get a job.
This seemed a good idea until it proved difficult to find one that I was both qualified for and interested in. As such I found a PhD in solid oxide fuel cells research at the materials department of Imperial College London. I thoroughly enjoyed my time under the supervision of Dr Stephen Skinner and together we had published a number of papers on the behaviour of Cerium Niobate as an oxide ion conductor. I very recently obtained my PhD and was overjoyed to receive the Constance Fligg Tipper Centenary Memorial prize for outstanding contributions to Materials Science and Engineering. I joined PerkinElmer 8 months ago as a thermal analysis usability engineer but very quickly moved to elemental analysis becoming the Organic Elemental Analysis Product Manager 6 months ago. I am a keen sportsman playing for a local football team as well as being the vice chairman of the club. I also like playing cricket, golf, tennis and badminton. Away from sport I love travelling, computer gaming and watching films.

Free Workshop Meeting

Dept. of Chemistry, University of Sheffield
11am – 4pm, Tuesday 24th November 2009

Alan Jones is holding a workshop meeting in his laboratories at Sheffield for any interested group member.
Topics covered will include the weighing of liquid samples, titration techniques for sulphur and halogens and some of the various microbalance models available.

Owing to the size of the laboratory, spaces are limited. So please contact Alan (details opposite) to reserve your free space now.

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Analytical Division MicroAnalytical Group Committee Members

Mr Richard Morris……Vice-Chairman
Ms Louise Dixon……..Secretary
Dr John Price……...Treasurer
Mr Paul Hemming
Mr Alan Jones
Dr Robert Packer
Ms Rebekah Vine
Mr Richard Wall

Diary Dates

Tuesday, 22nd September 2009
Analytical Forum
University of York, Department of Chemistry

Tuesday, 24th November 2009
Workshop meeting
University of Sheffield, Department of Chemistry

Tuesday, 16th February 2010
AGM
Fish Room, RSC, Burlington House, London

Contact Us

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Visit our website at…
http://www.rsc.org/Membership/Networking/InterestGroups/Microanalytical/index.asp

Published and printed by the MicroAnalytical Group for its members