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**“Promoting the professional and scientific interests of members to safeguard the public interest in the application of chemical sciences in water-related industries.”**

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## 11<sup>th</sup> International Conference on Mercury as a Global Pollutant, Edinburgh, July 2013: A huge success!

The Water Science Forum (WSF) were actively involved in the recent 11<sup>th</sup> International Conference on Mercury as a Global Pollutant held in Edinburgh in July.

Helen Keenan Vice Chair of WSF was also Vice Chair of The conference. Clive Thompson arranged a very successful public open day ahead of the conference on Sunday 28<sup>th</sup> July. Simon Gillespie and Clive also chaired sessions during the conference and Clive was also chair of the very contentious debate on Mercury -

What dose makes the poison?

Kevin Prior Chair of WSF manned the WSF stand giving out leaflets and explaining to the public what we do in WSF.

WSF also awarded prizes for student presentations to the tune of £1000! (see below)

So all in all WSF had an extremely high profile at this prestigious event!

A full report of the event is in page 2.



(L-R) Simon Gillespie, Helen Keenan and Kevin Prior

## Water Science Forum Award Winners!

The WSF was delighted to support this event with awards for the best student oral presentation, best student poster and runner up student poster.

The winner of the best oral presentation was Cornelius Brombach, University of Aberdeen who present his research “New Speciation Method for Mercury in Water and Biological Samples by Selective Pre-concentration and Subsequent Analysis via HPLC-CV-AFS”.

After receiving the award Cornelius said:

*“My research wouldn't be possible without the support of my supervisors W. T. Corns, B. Chen, E. Krupp and J. Feldmann. A special “Thank-You” to them. I want to say a huge “Thank-You” to the WSF of the Royal Society of Chemistry for donating the award. Winning the award is a nice acknowledgment of my research and I am grateful for it”*

The best water poster was won by Robin Smith (ETH Zurich, Switzerland) for her work entitled “Source Tracing Using Stable Isotopes signatures in Sediments Downstream of the New Idrija Hg Mine”



Dr Helen Keenan Vice-Chair of WSF presenting Cornelius with his cheque for £500!



Poster winner:  
Robin Smith

The poster runner up prize was won by Jessica Huber of the Universität Ulm, Germany for her work:

“Development of an On-line UV Digestion Unit for Subsequent Reagent-Free Mercury Analysis in Waters”



Poster runner-up: Jessica Huber

## This edition's water factoid:

*"It is generally taught that water exists in 3 phases; solid, liquid and gas. However, as well as these there are at least 5 different phases of liquid water, and 14 different phases (that scientists have found so far) of ice. Cooling water generates strange effects. At -38 °C even the purest super-cooled water spontaneously turns into ice (with a little audible "bang" no less). At -120 °C the water becomes ultra-viscous, or thick like molasses, and below -135 °C it becomes "glassy water," a solid with no crystal structure"*

## 11<sup>th</sup> International Conference on Mercury as a Global Pollutant

Clive Thompson

The International Conference on Mercury as a Global Pollutant (ICMGP), has been held periodically for over 18 years and has become the pre-eminent international forum for formal presentation and discussion of scientific advances concerning environmental mercury. The meeting gathers around 700-1200 experts for a five day conference and exhibition. The ICMGP in 2013 was of particular public importance as this is the year of the launch of the United Nations Environment Programme Global Legally Binding Treaty on Mercury. The ICMGP 2013 meeting was therefore perfectly timed to celebrate the official launch of the treaty and to discuss how to put the treaty into practice. In recognition of the importance of mercury in the public and political agenda with the 2013 launch of the United Nations Environment Program's Global Legally Binding Instrument on Mercury, the theme of the ICMGP 2013 conference was "Science informing global policy".

To this end, the conference promoted much discussion on some of the questions that are likely to arise in 2013 and beyond: What form does the new UNEP Legally Binding Treaty take and what does it mean in practice?

How do we curb current mercury supply and demand?

How do we reduce emissions from human activities?

What evaluation tools do we need and is our current "tool-kit" of monitoring and modelling techniques up to the job?

What health and social effects has mercury had and how will this change in the future?

How do we deal with remediation of contaminated sites and ecosystems?

What is needed in terms of technologies and psychologies of social change?

What synergies are there with existing, impending and potential global treaties, issues and scenarios?

How do we raise our concern and action on mercury "from local to global"?

The event attracted ~950 delegates from 65 different countries consisting of seven parallel streams of oral presentations with daily poster sessions. In total there were over 1,000 presentations and posters over the five days.

The free Public Open Day on Sunday 28<sup>th</sup> July went really well. There were 18 stands/demonstrations including on-site measurement of mercury vapour arising in the mouths of visitors from amalgam fillings (PSA Analytical) with the adjacent stand measuring mercury in hair of visitors (Minimata Institute from Japan). Children could also dress up as volcanologists (Oxford University) in a heat resistant suit and be photographed. Although it was a wet Sunday afternoon in Edinburgh, the Open Day event was very well patronised. The WSF stand was manned by Kevin Prior and the RSC stand by Sandy Gray in Scottish attire. This latter stand with the molecular modelling activities was by the most popular with the many children present. Rachel Purser-Lowman manned the RSC stand at the main five day event and did a really excellent job promoting RSC; WSF and especially RSC Books. Many RSC books were sold during the event.



The SCI stand was manned by myself and I presented a poster on the use of the many mercury drugs liberally prescribed (many in mega quantities over long periods) by the medical profession to their patients in the period 1950 to ~1970. Also a 1973 review of mercury toxicity was presented entitled "Tempest in a teapot".

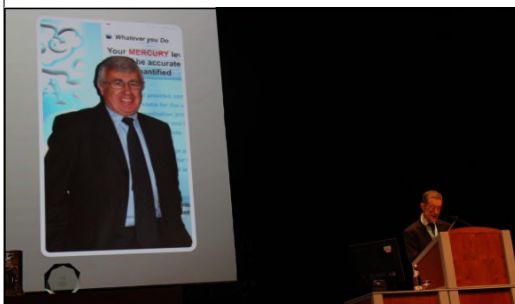
There was also an associated 5 day trade exhibition with 48 stands positioned close to the posters and coffee points. Most of these 48 exhibitors were associated with mercury analysis/sampling equipment as well as various research organisations; Dow; Nalco (dry scrubber materials); RSC; SEPA and two contract laboratory groups (Intertek and SAL).

Many of the attendees were University Researchers, almost all of whom had submitted presentations or posters. Most of the 15 minute presentations were highly specialised. Many contained a lot of technical information to assimilate.

Two of these research groups (The Faroe Islands' Child Development Projects) had been set up over 20 years ago to investigate the long-term health of primarily fish eating communities. The latter is changing its name to reflect that many of its participants are no longer children. There is some intense rivalry between the two groups. The former is maintaining that the methyl mercury in fish is causing brain damage in children with the main protagonist actively promoting his book "Only one chance" at the event. See: - <http://www.amazon.com/Only-One-Chance-Environmental-Development/dp/0199985383> and <http://www.youtube.com/watch?v=M7pqF43WIOk>. The latter group appears to have found little negative effects with the fish diet in the Seychelles with the fish diet protecting the children against the additional mercury ingested risk.

Some presentations in the seven parallel streams were highly specialised, e.g. "Suppression of mercury methylation by hypolimnetic liquid calcium nitrate amendment: Results from a field demonstration project in the State of Minnesota, USA" and "A synthesis of mercury studies in California's Sacramento-San Joaquin Delta, 1998 - 2008: Scientific support towards a landscape-level management plan for controlling mercury exposure".

The two hour open Panel Session on Health Impacts from Mercury: Emerging science and unanswered questions went really well. I was worried as co-chair of this debate session that it would become unruly. Fortunately, it was a very civilised discussion session even though there was much disagreement expressed.



Professor Peter Stockwell of PSA Analytical received the "Industry Award" at the end of the event. This is a very successful UK analytical Instrumentation Company founded in 1983 providing excellent customer service and back up that, so far, has avoided being swallowed up by very large competitor acquisitive companies.

Overall, it was a very successful event and I now know considerably more about global mercury pollution and potential adverse effects on human health.



# Working Together for Sustainable Water Quality

Volume 14 Issue 2

Scientists, policy makers and citizens must work together to preserve public drinking water and environmental water quality, said Kevin Prior Chair of the RSC Water Science Forum (WSF) speaking in Edinburgh earlier this month.

WSF have just launched their new series of Briefing Notes aimed at policy makers and other stakeholders involved in determining public policy related to water issues.

The first of these is on the topic of water purity and examines just what does "pure water" mean to different groups. It goes on to consider what society needs to ensure we have water of the appropriate quality to carry out our daily needs, plus meet industrial, agricultural and environmental requirements. The briefing note highlights the people, process and resource requirements to ensure water quality is fit for purpose. The full briefing note can be downloaded from the WSF webpage <http://www.rsc.org/Membership/Networking/InterestGroups/WaterScience/index.asp>

Briefing notes on the topics listed below will be produced over the next few months.

- the water-energy-food nexus,
- water treatment,
- wastewater treatment
- private water supplies, and
- point of use devices



These Briefing notes are typically written for those senior-level decision-makers and policy who:

- have to keep track of many, often unrelated, issues
- may not be familiar with the issues and may not have any related background
- for whatever reason, cannot spend time doing their own research
- needs a capsule version of the key points and considerations about an issue

WSF hopes that they will also be useful to students, teachers, and other interested non-specialists who want an overview of current issues in water science and related fields. The briefing notes will be a short, concise overview of the issues in question summarising the consensus scientific view and highlight any significant alternative views. They will also draw attention to public policy requirements and ways in which chemical scientist are contributing to the resolution of the issues in question.

If you as a member of WSF would like to contribute to these briefing notes please contact the Hon Sec Roger Wellings.

## Forthcoming WSF events in 2013:

**Innovation Workshop,  
UK**

November 2013

**WSF Engagement  
Event, Royal Society  
of Edinburgh**

13th November 2013

For further info: [http://  
www.rsc.org/  
Membership/Networking/  
InterestGroups/  
WaterScience/  
ForthcomingEvents.asp](http://www.rsc.org/Membership/Networking/InterestGroups/WaterScience/ForthcomingEvents.asp)

## Indo-UK Conference on Water Quality

RSC held a successful Indo-UK RSC conference on water quality with the WSF. A visit to an Indian community membrane water treatment plant was also undertaken (see photos below).



L-R: water company consultant, Rajesh Parishwad from the RSC Bangalore office and Professor B Sarkar, University of Toronto, Canada

## Science Jokes!

*"I only make bad  
chemistry jokes  
because all the good  
ones Argon"*

*Q: Does anyone know  
any jokes about  
sodium?*

*A: Na*

**NaCl**  
**NaOH**  
The base is under a salt!

*"After such a long  
absence I'd like to  
apologise for not  
sending more chemistry  
jokes...but I only  
update them....  
periodically"*

More conference details are available here:

<http://www.rsc.org/conferencesandevents/rscevents/international/india/water-quality-2013.asp>

**The Newsletter of the  
Royal Society of Chemistry  
Water Science Forum**

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The views expressed in the newsletter are those of the authors and do not necessarily represent the views of the RSC, the Water Science Forum or the author's organisation

**Alan Tetlow Bursary**

In memory of Alan Tetlow the Water Science Forum bursary will help post graduate students, young (under 35) or professional water scientists during the first 10 years of their career.

Contact: Hon Sec, RSC Water Science Forum, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK

**WSF Committee:  
Call for Nominations**

Membership of the WSF committee - The Committee may comprise of up to 15 persons from the membership of WSF. Committee members may then serve up to two consecutive terms, each of three years. There are slightly different rules for Officers of the Committee (i.e., Chairman, Vice-Chairman, Treasurer and Secretary).

In recent years there has been a shortage of members willing to serve on the committee but presently the committee is up to full strength. Nominations, however, to the committee are welcome at any time. In the absence of any nominations coming forward, those eligible for a second term can be re-elected by the committee. Any nominations should be sent to Dr Roger Wellings, Secretary to the Committee.

## CPD and the Water Cycle

*Martin Padley*

The work of chemists and other scientists is fundamental to many roles and organisations that work within the water cycle – protecting it whilst at the same time ensuring the sustainable and efficient provision of clean safe drinking water.

One of the many roles undertaken by chemists and other scientists in this sector is the analysis of potable water – ensuring that it is wholesome and meets the various regulatory requirements across the UK. The importance of this role is explicitly recognised within the water quality regulations of England and Wales, Scotland and Northern Ireland. Specifically, the regulations require that the analysis of potable water is undertaken by or under the supervision of a Competent Person. The details of the requirements can be found in guidance provided by the Drinking Water Inspectorate at:

[http://dwi.defra.gov.uk/stakeholders/information-letters/2007/08\\_2007ANNEX.pdf](http://dwi.defra.gov.uk/stakeholders/information-letters/2007/08_2007ANNEX.pdf)

This guidance sets out the roles and responsibilities of competent persons, technical management and quality management and their qualifications, training and Continuing Professional Development (CPD) requirements. In addition, the guidance sets out the timescales for implementation and transition arrangements from “grandfather/mother rights” to full compliance. Importantly, all new appointees to Technical and Quality management are already required to be of Chartered Status or working towards it. Most importantly, all of the competent person requirements have to be met by the end of December 2013.

In developing its range of skills, which form the CPD element, the drinking water regulators have explicitly based their requirements on the same areas as those required by the RSC, the Society of Biology and others for gaining and maintaining Chartership. This alignment provides a number of benefits for professional scientists currently working towards those requirements – in terms of using the great range of RSC resources and CPD recording tools and in terms of using it as a springboard to apply for Chartered Chemist status (or Chartered Biologist with the SoB).

All laboratories involved in the analysis of potable water used in the public supply have either fully implemented these requirements or are in the final stages of doing so. Encouragingly, most have chosen to extend the requirements to all of their analysis – so that the benefits of this approach are spread to those involved in other water related analysis (e.g. wastewater).

In summary, Chemists and other Scientists involved in the analysis of potable water can use the imminent arrival of the regulatory requirements for competence as an opportunity to enhance their professional development, using the wide range of RSC resources available on CPDs. Additionally, the RSC Water Science Forum will continue to promote a number of seminars and conferences that can be used to support members CPDs.

## RSC Sustainable Water Award

*Lizi McLoughlin*

The RSC Sustainable Water Award 2014 is now open for nominations. This year the RSC worked with the Water Science Forum to provide clearer guidance on areas of chemistry that are relevant to this award. The award recognises contributions to equitable water supply and there are no restrictions on who can be nominated.

Chemical sciences and technology can contribute in many and varied ways to developing sustainable water supply. Rainwater harvesting, grey and black water re-use, energy conversion and storage, and desalination are just some of the areas in which chemical science research has the potential to have a positive impact. It is also important that sustainable water is approached in a holistic manner, taking into consideration the availability, movement, treatment and use of water and waste water, as well as the water-energy-food nexus.

If you know of somebody who you feel deserves to be recognised for their contributions to the field, nominations can be made online until the 15 January 2014, please visit:

<http://www.rsc.org/ScienceAndTechnology/Awards/nomination.asp>.

This year the nomination system for RSC awards has been simplified, and for the first time only RSC members can make nominations. To find out more about the award, and exact details of criteria for nomination, please visit:

<http://www.rsc.org/ScienceAndTechnology/Awards/SustainableWater/Index.asp>.