Sustainable Water - Water System Science & Policy Interfacing

Kevin Prior

Scientists, engineers, and technologists may have technical solutions which can address water sustainability issues. However, they cannot impose them on society and must use the available channels in order to inform and help influence public policy and organisational strategies. The experiences of the RSC Water Sciences Forum (WSF) illustrate how scientific bodies can participate productively in this process and demonstrate that scientists must work with politicians, consumers, and citizens in order to ensure that policies are based on sound science and evidence.

WSF is an Interest Group of the Royal Society of Chemistry with Worldwide membership. Members are mainly based in the UK with significant members in other EU/ member states plus the USA, Australia and UAE. Members are employed in Accidents (Teaching & Research, Students), Regulation, Utilities, Water Sector service providers (private and public), and Consultancy, contractors, technology, and equipment suppliers.

So what is Policy? A plan of action to effect change. Policies have two Roles: Informative: communicates to a wider audience what the organisation is trying to achieve. Functional: the policy acts as a guide for future action for the organisation.

Who are Policy Makers? Public Policy makers are:

- Ministers and other MPs, Lords and parliamentary committees
- Civil servants in government departments, devolved administrations and agencies
- Members of regional assemblies and local authorities
- Scientific and political advisors and advisory bodies

Policy is also made in commercial and not for profit organisations which can also influence the sustainability of water. Policy makers in that situation are the board members and their advisors.

Water Scientists have the opportunity to be involved in all stages of the development of water related policy with the exception of the policy decision stage which should be reserved for the decision making body of the organisation. In the case of public policy that is usually the elected representatives of the people concerned.

WSF communicates with policy makers and takes part in the policy development process as part of its main objectives, in particular in assisting the Royal Society of Chemistry in presenting a corporate view to national and international government on matters relating to the water environment. WSF does this by:

1. Writing briefs for RSC, Responding to public consultations, contributing to development of standards, Regulations, Guidance documents.
2. Participating at Public Policy Making events: (i) national and international conferences; (ii) Public Consultations.

As part of WSF’s conference and seminar programme International Conferences aimed at Science Policy Interface are organised with other like-minded organisations e.g. Joint RSC-WSF, SCI, IWW (Germany) Water Framework Directives series now at WEFOS and the Water Contamination and Emergencies (WCEC3). National, Local and Regional Events are also held. Last but not least members available to speak at member’s (MPh, MSP, AMPh) and the media.

The experience of those and other Science Policy Interface events has highlighted:

- The common barriers to successful policy implementation:
  - Technically inadequate
  - Socially and culturally unacceptable
  - Not economically feasible
- Makes too great a demand on available human resources
- Counter to constitutional requirements
- Blocked by other govern departments due to lack of coordination and consultation
- External factors such as poor public servant morale or public resistance

How the strategic behaviours of the parties can influence policy making

- Criticality of accurate, reliable, and repeatable scientific evidence that was accessible and understandable by everybody involved
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The three principal sponsors were RSC-WSF, SCI and IWW. Seven other sponsors also gave valuable support. The conference was co-organised with SecureEu (see http://www.secure-05.eu/) which held a separate security dissemination workshop on the future conference to allow the transfer of classified results from the five year SecureEu FP7 project dealing with security in drinking water distribution systems following a deliberate contamination. This final session included presentations on the significance of the internal surface of mains pipes in drinking water distribution networks; contamination decontamination strategies after contamination; health implications of contamination; and systems to enhance protection and recovery operations in contaminated water systems.

There were 11 keynote speakers invited representing the EU, the World Health Organisation, the UK Health Protection Agency, and various international academic and industrial organisations.

Some 35 posters were accepted and ten authors had the opportunity to make short presentations. There were eleven exhibitors and their stands generated much interest.

The conference dinner was held in the imposing Muehlheim Municipal Hall and the Muehlheim Water Award and prizes for the two best poster prizes were presented.

Proceedings of the conference containing full papers and poster presentations will be published in book format as the proceedings of the previous four conferences. Papers will be edited by three organising committee members and reviewed by the RSC before publication. Editing will start in January 2013 and proceedings should be hopefully available from May 2013. Proceedings may be purchased direct from RSC Publishing. There should also be a special package deal available to purchase the proceedings of all five WCEC events.
The Draft Water Bill
Martin Padley

The water industry in the UK operates within a very tight regulatory framework, governed by a number of European Directives and national legislation, regulations and regulations. Over the last 23 years, this framework has successfully enabled all parties to work together to deliver improvements to drinking water and environmental protection.

However, in England and Wales and in recognition of the challenges of a growing population, a less certain water supply situation, a desire for greater environmental protection and to give customers more choice, the Government published the Draft Water Bill in July 2012.

This Bill includes a number of significant changes, including measures to incentivise sustainable water management and abstraction and to make competition easier. Competition could take a number of forms, including a new entrant treating and distribution water into an existing network, often referred to as wholesale competition.

The Draft Bill is likely to become law in 2013.

Providing professional recognition for technicians and technical scientists
Steve Ward

In April 2012 the Royal Society of Chemistry (RSC) successfully applied for a pilot licence from the Science Council to award the designations Registered Science Technician (RSciTech) and Registered Scientist (RSci). These registers are predominately aimed towards people who have a QCF level 3 (e.g. A-Levels) and QCF Level 5 (e.g. HND, FdSc) qualification respectively, and have experience working in a technical role in science. Though the registers are limited to scientists, engineers, operators and regulators to work together to effectively protect the environment water quality and customer service and confidence.

In particular, a good technical understanding and management of the introduction, blending, hydraulic behaviour and interaction of new water types with existing waters and water supply networks will be required. There are numerous examples of potential issues, including mixing waters with differing hardness, disinfectants, metals or trace organic components that may result in unintended consequences as diverse as abnormal taste or odours, discolouration or changes to harness.

The RSciTech register requires candidates to demonstrate technical knowledge and understanding in one of fifteen areas of expertise, including distribution, water treatment, water analysis, water testing, water quality and potable water quality monitoring.

The RSci register requires candidates to demonstrate technical knowledge and understanding in one of sixteen areas of expertise, including distribution, water treatment, water analysis, water testing, water quality and potable water quality monitoring.

Recent topics range from scientific topics as broad as pharmaceuticals, potential endocrine disrupting chemicals, molybdenum, nanoparticles and nitroamines through to less scientific but no less important topics such as the use of language in customer perceptions.

A summary of an individual’s overall experience related to key professional attributes. An ongoing diary element to the record, noting specific CPD events and experiences encountered with reference against the professional attributes. A process for review of CPD by an individual’s manager or mentor such that gaps may be identified and a plan made for development.

Water Droplets:
“...The same amount of water exists on earth now, as did when the earth was formed. Drinking water taken from a tap could contain molecules that Neanderthals, or Michael Faraday drank...”

Martin Padley

CPD and Potable Water Quality Compliance Monitoring
Gavin Mills

Continuing Professional Development has become an important tool for charting and planning individuals’ careers. RSC provides support to members in this area through training, networking opportunities and RSC approved professional qualifications. CPD has become an essential feature for those working in the field of potable water analysis in the UK and this article explores the link between the regulatory background, individual’s personal development and how RSC provides the support for this process.

Regulation 16(2)(d)(i) of The Water Supply (Water Quality) Regulations (2000 England & Wales, part 1 of 2001 Scotland, 2002 Northern Ireland) states that the analysis of potable water should be carried out or supervised by “competent” persons. The definition of competence in the regulations goes beyond proficiency in specific tasks, to a demonstration of competence in a range of key areas. These competencies are described in guidance provided by the Drinking Water Inspectorate (DWI) h t t p : / / d w i . d e f r a . g o v . u k / s t a k e h o l d e r s / i n f o r m a t i o n / t e s t l e t t e r s / 2 0 0 7 / 0 8 / 2 0 0 7 A N N E X . p d f and extend from nine competencies for analysts to sixteen for technical and quality managers.

The timetable for implementation of the guidance is well established, with water testing laboratories being on course to meet requirements fully by December 2013. At this final stage, all competent persons should have CPD records demonstrating competence in all the required areas with managers having obtained Chartered status in their respective profession.

RSC supports the process of complying with the regulatory guidance in terms of awarding Chartered status (CChem) - see h t t p : / / w w w . r s c . o r g / m e m b e r s h i p / q u a l i f i c a t i o n s / c h a r t e r e d s t a t u s / c c h e m . a s p. Chartered status is awarded and maintained by demonstrating twelve specific personal attributes. Key to demonstrating competence in these areas is the production of a CPD portfolio which typically comprises the following:

- A summary of an individual’s overall experience related to key professional attributes.
- An ongoing diary element to the record, noting specific CPD events and experiences encountered with reference against the professional attributes.
- A process for review of CPD by an individual’s manager or mentor such that gaps may be identified and a plan made for development.

The DWI have adopted the RSciTech professional attributes in producing their own competencies and the processes involved in regulatory compliance and gaining Chartered status overlap to the extent that the first nine classified as “critical” are identical. The drinking water regulations include additional competencies related to analysis but it is of great benefit that progression with the profession is linked in this way. RSciTech also support registration of non-graduates in conjunction with the Science Council in relation to Registered Science Technician and Registered Scientist (RSciTech and RSci) and CPD forms part of this initiative.

In summary, the regulatory requirement for those working in potable water analysis to demonstrate professional competence is supported by the RSciTech in numerous ways, particularly in the area of CPD and mechanism to obtain Chartered status. The Water Science Forum supports a variety of CPD conferences that as well as being useful events in their own right, also allow individuals to obtain experience in key professional development areas. In due course, the need for CPD will be extended to other important areas such as sampling and on-site analysis and organisations also view CPD of great benefit outside of regulatory requirements.

Water Science Forum

Subscriptions 2013
2013 all inclusive fee
* up to 3 internet groups included in RSC membership, each additional interest groups £10 each

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In the recent past has favoured graduate level entry level. The RSciTech register requires candidates to demonstrate technical knowledge and understanding in one of fifteen areas of expertise, including distribution, water treatment, water analysis, water testing, water quality and potable water quality monitoring.

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To better understand the current provision;
To determine the future landscape;
To identify what the RSciTech must do as a professional body to support its technician and technical scientist members.

To date the RSciTech has contacted over 100 companies across all sectors of the chemical sciences and completed approximately 60 questionnaires.

With a strong tradition of developing technicians and technical scientists and the drive to demonstrate regulatory competence, the water sector has already responded very positively to this new level of professional recognition. In fact the water sector is leading the way with Affinity Water (formally Wessex Water) and Northern Ireland Water producing the first batch of Registered Scientists via the RSciTech.

The RSciTech is accepting direct applications for both of these new registers but also working on accreditation of qualifications, apprenticeships and in-house training to allow for a more streamlined application. For more information visit the RSC website www.rsc.org/rsci-rscitech.

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