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- Disinfection Services in accordance with BS 6700 and the HSE ACOP L8.
- Water sampling and analysis.
- Commissioning Services.

EQUIPMENT DIVISION:
- Pegasus: Water Softeners.
- Phoenix: Mediagon Physical Water Conditioners.
- Tucana: UV Disinfection Units.
- Dorado: Dioxychlor Chlorine Dioxide Delivery Systems.
- Aquarius: Dosing Systems.
- Cygnus: Filtration Systems.

SERVICE & MAINTENANCE DIVISION:
- Legionella Control Services: Risk Assessment and Risk Management.
- Water Hygiene Services: Monitoring and testing, cleaning and disinfection of water service systems and cooling towers, water tank upgrades and refurbishment.
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A Message from the Chairman

A very warm welcome to this winter edition of the Societies’ newsletter. This new look edition marks the 4th issue of our new formatted newsletter which will continue to be issued on a quarterly basis during each year to our members. We within SoPHE should be very proud of this production and this flagship document shows our continued professionalism within the building services sector.

As we enter the winter period of 2011/2012 the overall economic outlook still remains very weak and uncertain, particularly in the UK, although there are still some signs of stability and growth in some areas of the market. I along with others can only hope that a continued recovery is sustained during the next quarter and for the remainder of 2012. We shall all have to wait and face the economic future with uncertainty, but be hopeful for better times ahead.

As I look back on 2011 as a year I would like to summarise some of the achievements that the Society has contributed to and achieved during the year. First of all back in January we updated and provided further Membership guidance notes to those seeking membership of the Society. The purpose of the guidance notes were to provide examples of the type of information that should be provided by applicants, particularly Section 3 : Employment and Experience Details.

The Society has seen a stable growth in the overall Membership base. Despite the trying economic strains that our industry has faced over the last year our membership numbers have remained stable with an overall increase of 5% on last years’ numbers. Our Membership now stands at 175 and I hope to see further growth on this number during the coming months and during the remainder of 2012.

Earlier in the year SoPHE took part in a Plumbing Industry Forum meeting and presentation evening hosted by the Worshipful Company of Plumbers (TWCOP). Other organisations representing the Plumbing Industry included CIPHE, APHC, HVAC & SNIPEF. During the year the SoPHE website was also given an upgrade, making it easier to access technical information and keep up to date with the very latest news of the industry and SoPHE activities.

In May of this year I was honoured to attend the SoPHE Inaugural Northern Dinner in Manchester. This was a highly successful event with a total of 89 guests in attendance. As a result of this years’ event the 2012 Northern Dinner is now being planned and further details in addition to those on Page 4 will be provided to members in the near future.

I am delighted to announce that this year the 1st Public Health Engineering student graduated from Greenwich University in the summer. I would again like to congratulate James Day on this memorable achievement on a personal and industry level. In June of this year our AGM took place at which I presented a paper on the aims and objectives of the Society. This presentation has been uploaded onto the SoPHE website. The Societies’ CPD technical seminars have continued to take place which are a key ‘backbone’ in what SoPHE can offer to its members. On average a total of 5 - 7 technical presentations have run on behalf of the Society and these have all been carried out around the SoPHE Regions to all members, well done to all of those who have contributed to these events.

Back in September the World Plumbing Conference 2011 took place in Edinburgh. This was the 9th World Plumbing Conference and was hosted by SNIPEF – Edinburgh. In October the TWCOP held their unveiling ceremony of a plumbing apprentice statue at Cannon Street Station. SoPHE was represented at this landmark event and we wholly offered our congratulations to the Master and Company Members.

The final landmark event for the year was of course our Annual dinner held in November, which was well represented buy some 272 guests. Our annual awards were also well received, which this year involved Martin Shouler, Hon, Treasurer, receiving a CIBSE Bronze medal. A full write-up of this event is contained within this newsletter.

As I have previously stated, one of my key aims is to continue to promote the Society within the general industry at large and I will continue to look for opportunities to do this on behalf of our members. This will always remain a short, medium and long-term priority for me as your Chairman.

The next edition of the SoPHE newsletter, the spring edition, is due to be issued to members at the end of April 2012.

My final thought for this edition of the newsletter is to once again thank all of those who support the Society, whose dedication and enthusiasm enable us to keep improving and moving forward with the ultimate aim of raising the profile of our trusted Society.

Chris Northey
On the evening of 3rd November 2011 at The Royal Garden Hotel in London the Societies’ Annual dinner took place. This event marked the 8th Annual Dinner organised by the Society. The event’s proceedings were conducted by the Chairman, Chris Northey. Chris outlined that he believed that this 8th SoPHE Annual Dinner was once again a very special and momentous occasion for the Society. Chris also believed that this new established event will continue to be a highlight of celebration for the Society as a whole moving forward. The evening was attended by some 272 industry colleagues and VIP guests, which was a great credit to the Society. Chris welcomed all attending the dinner and in particular the distinguished VIP guests who kindly accepted to join him for the evening. During his speech Chris paid tribute to John Swaffield. “John always willingly and enthusiastically shared his knowledge and was particularly supportive of SoPHE, dating back to when the society was first established in 2002. He was made an honorary fellow of SoPHE in 2009. John was, without doubt, a pioneer in the field of public health engineering, and will be greatly missed by all.” Chris also paid tribute to the Steering Committee of the society whose continued hard work and dedication goes on behind the scenes on a daily basis in developing the Societies’ aims, activities & image. Chris also stated that, “it is particularly important to acknowledge the commitment and dedication that the SoPHE Regions, namely the North-West, Scottish & South-West Regions of the Society.” Chris was also very privileged to attend the 1st Inaugural SoPHE Northern Dinner in Manchester on 6th May which was a huge success and achievement, with a total of 89 guests in attendance.

Chris also went on to thank the Industrial Associates who are a key part of the societies structure and success, who offer invaluable support and knowledge transfer to our members. He stated, “The Industrial Associate Membership now stands at 38; and is still growing. Over the last 8 ¾ years the Society has seen a steady and continued increase in membership year upon year, which is a credit to our specialised part of the building services industry. At present we now stand at 175 individual members.”

SoPHE Honorary Fellow Presentation
The first award of the evening was to award a SoPHE Honorary Fellowship. A SoPHE Honorary Fellowship is the highest accolade that the Society can grant to an individual of the highest standing within industry. Chris then announced, “On behalf of the Executive of SoPHE I would like to formally announce that this year we wish to present an Honorary Fellowship to: - Robert Burgon

Before Chris presented Robert with his Honorary Fellowship, he read out a short citation of Robert’s industry achievements within the Plumbing Industry, a summary of some of his achievements follows:
Robert joined the staff of the Scottish & Northern Ireland Plumbing Employers’ Federation in August 1978 as assistant industrial relations officer. He was appointed as Chief Executive of SNIPES in November 1988. He was also appointed as Secretary & Pensions Manager of Plumbing Pensions (UK) at the same time. Robert was involved in the establishment of BPEC (Training) Ltd in 1989/1990 and served as Secretary/Chief Executive of the organisation from its first meeting until the end of 2002 when he was appointed as a Board Member. He was involved in the development of SummitSkills as a Sector Skills Council & was the first Secretary of the Company.

CIBSE Bronze Medal Presentation
The next award of the evening was the presentation of a CIBSE Bronze Medal for services to SoPHE to: - Martin Shouler. The CIBSE Bronze Medal is awarded to a member of the institution for outstanding service to a region, branch, society or group of the institution, for a minimum period of 10 years service. Martin’s service to CIBSE has included, from 1997 - 1999: Public Health Engineering (PHE) Group: Technical Director, from 1999 – 2002: Public Health Engineering Group: Vice Chairman, from 2003 – 2010: Society of Public Health Engineers (SoPHE), Chairman, from 2004 – 2010: CIBSE Council Member and from 2010 – Present: Society of Public Health Engineers (SoPHE), Honorary Treasurer.

Martin continues his service to the Society by taking on the important role of Honorary Treasurer. Martin is only the 4th SoPHE Member to be awarded a CIBSE Bronze Medal.
SoPHE Guest Speaker
The Role of Summitskills within the Plumbing Industry
After the CIBSE Bronze Medal presentation Chris then went on to introduce this years’ guest speaker, Lindsay Gillespie of Summitskills. Lindsay joined Summitskills as an Executive Director in 2003, from engineering services training trust Ltd (one of the sectors predecessor national training organisations), where he held the post of chief executive for 5 years. Previous to this he worked with the Construction Industry Training Board & the Heating & Ventilating Contractors’ Association. As Executive Director, his role includes ensuring there is a full suite of relevant national occupational standards, qualifications & apprenticeships for the sector. Lindsay is also responsible for Summitskills research & communication departments. Lindsay’s speech covered the following.

What is Summitskills? Summitskills is the Sector Skills Council for BSE. It is a UK wide independent charity, led by employers and licensed by government to help increase employer investment in skills to: drive enterprise, create jobs & create sustainable growth. Summitskills represents 61,000 businesses, employing 613,000 people and contributing £20 Billion per annum to the UK economy. Summitskills operates thorough a board of 12 trustees and a chairman. One of the Trustees is your Chairman, Chris Northey.

So what does Summitskills do? Firstly - find out what employers skills problems are (research, our groups’ industry groups and industry organisations). Secondly - Work up solutions with employers to tackle the problems (usually within government funded frameworks). Thirdly - Work with awarding bodies, colleges, universities and private trainers to support them delivering the solutions. Represent employers’ views to government – policy formulation (Higher education, Micro generation strategy, green deal) focus on skills.

What does all of that look like for plumbing? As a result of research and consultation with employers, new more flexible qualifications are in place for plumbing; aligned Gas ACS, provide environmental technologies options, i.e. Solar, Heat pumps or RW Harvesting. These options are also available as CPD qualifications for existing workers.

National Skills Academy Summitskills has done significant work in getting the first phase of environmental technology qualifications in place, i.e. Awareness, Solar thermal, Rainwater harvesting and recycling and Heat pumps.

What about Summitskills and the future? Funding has until now been partly from the sectors main trade associations and partly from government, based on delivery of clear objectives within business plans. Next year this moves to contestable funding that means winning funding bids which in turn means developing new skills within Summitskills and different ways of working.

SoPHE Charity Donation to Water Aid
The final duty that Chris performed was to present a cheque on behalf of SoPHE to Wateraid. Wateraid is the nominated Charity of the Society and each year a donation is made to this worthy organisation. This year a cheque for the sum of £1,000 was presented to Wateraid during the evenings events.

SoPHE visits ACO Training Academy – by Dr Steve Ingle
Various SoPHE delegates from throughout the UK attended a technical meeting at the ACO training academy, Rendsburg, Germany on the 8th-10th September 2011. Upon arrival, the delegates were warmly welcomed by the Chairman of ACO international Mr Hans-Julius Ahlmann.

The first presentation was by Ms Brunhild Schmidtke who gave a clear and concise view of what the company is involved in internationally and how the ‘Bracelet of ACO products’ works over 5 continents. Included in this presentation, Ms Schmidtke covered a brief history of the company from 1780 up to the present-day. The range of products surprised many delegates, ranging from water management, grease management, rainwater harvesting, lift pumps; stainless steel rainwater/drainage pipes outlets and gratings, etc, to products combatting climate change.

This was swiftly followed by a presentation from Jonathan Robinson, MD ACO Building Drainage UK, who provided an overview of the shape of ACO UK. Mario Finelli Northern Specification manager then presented an overview of the current range of products, indicating how adaptable the range has become to deal with special design considerations on prestige projects and still meet all the run of the mill products required. He further explained the various designs of stainless steel gullies and outlets, linear drainage channels, fulbora alternatives and how the different designs could be used and integrated. To conclude, Trevor Turrington continued the presentation on grease management, stainless steel drainage, and access covers, etc, which was followed by an interesting debate during the Q&A session.

2nd Northern SoPHE Dinner, Manchester
As announced in the autumn issue, the 2nd Northern SoPHE Dinner is to occur on Friday 11th May 2012 at the Midland Hotel, Manchester. This dinner brings together water, drainage and public health engineers from around the UK, making it an ideal networking event and a great opportunity to catch up with friends, past and present.

All SoPHE member, affiliates and Industrial Associate members are encouraged to attend this prestigious event. For further details, please do not hesitate to contact Malcolm Atherton– m. atherton@dssr.co.uk Remember, the more the merrier!!!
This year's challenge for the SoPHE Young Engineers Award was conducted in partnership with WaterAid, to develop a proposal that would have the potential for actual use, in a real life and practical situation.

The challenge was based around one of WaterAid's current initiatives, which was to develop the design of a low cost dewatering device for a decentralised waste water treatment system.

As a number of WaterAid's Urban programmes have begun to work with municipalities and/or utilities to develop simple low-cost systems for a complete Faecal Management Cycle. Essentially, where sewers are not an option in the near future and where existing sanitation facilities consist of low-cost latrines (dry, pour flush or even ecological), there is a need for the collection, transport, treatment and disposal of this waste. At present, much of this waste is simply left buried or dumped locally, exacerbating local health problems.

The idea is that the waste is first collected and treated locally as an interim step, before being transported. Although this is technologically achievable and fairly cheap to operate, the final waste still has a high percentage of water.

The management model that WaterAid is working with is based on a simple solid waste management model that includes primary and secondary collection phases, with the primary collection part being wholly managed by community groups or small scale contractors. However, unlike solid waste, an extremely large proportion of the waste is water. The current model simply involves the primary collection teams emptying the pit toilets or septic tanks using a VacuTag or a manual pump called a Gulper. The contents of the pits are then transported large distances to the nearest sewerage treatment plant. Apart from being costly, extremely heavy, voluminous and slow to transport, the waste is also extremely toxic, carrying a high BOD (biochemical oxygen demand). Ironically, despite the water content, the waste is also too solid for the traditional treatment plant, often causing major system failures.

WaterAid has recently been considering using Decentralised Waste Water Treatment Systems (DEWATS – 'glorified' septic tanks) as part of the solution. The idea is that the waste is first collected and treated locally as an interim step, before being transported. Although this is technologically achievable and fairly cheap to operate, the final waste still has a high percentage of water. Therefore, WaterAid are looking for a very cost effective, robust and simple way to dewater this waste. Clearly the waste water will need to be safely disposed of locally.

The challenge was seen as being two fold, in developing a design for a DEWATINGS stage, as well as the system being able to produce easily transportable solid waste cakes to be taken elsewhere for further composting as well as safely disposing of the liquids on-site. Where the subsequent composting phase could form part of a potential business incentive.

Competition entrants were asked to consider all possible ways to reduce the costs that may be passed on to poor households. This could be through simplifying the technology or considering the entire management cycle and looking for ways in which small scale businesses or community groups are able to extract economic benefit from the phases.

We were very impressed, with the general quality and standard of the entries received from which entrants were selected to present their proposals to the judging panel. Some of the points of particular note that the judges were looking for were Low running costs, Minimal technical complexity, Small footprint, Robust and ability to manufacture locally with local materials.

This year's SoPHE Young Engineer of the year award went to Anokhee Shah of Arup. In her submission, Anokhee elected for the use of a dewatering screw, in conjunction with sludge drying towers. Details of her presentation can be found on the SoPHE web site.

Anokhee will be travelling to Maputo with WaterAid where she will have the opportunity to experience first hand, the issues with which this challenge is associated. She will have the opportunity, to research and discuss with WaterAid, the potential for implementing her proposals into their current Urban Programmes. In addition Anokhee receives an IPad.

Runners up and Highly Commended by the Judges were Christine Cambrook; Joanne Beale; Celia Way, who each receive a red letter day voucher to the value of £200.00

In Third place and Commended by the Judges were Sakthy Selvakanthan & Mimi Coultas. Sakthy & Mimi both receive a red letter day voucher to the value of £150.00

In fourth place, we have James Day, who receives a red letter day voucher to the value of £100.00

38th International Water Supply and Drainage for Buildings (CIBW62) Symposium, Edinburgh

Lynne Jack and her colleagues at Heriot-Watt University are currently organising the 38th International Water Supply and Drainage for Buildings (CIBW62) Symposium to be held in Edinburgh, August 2012. This symposium brings together water, drainage and public health engineers and researchers from around the globe, and provides one of the foremost platforms for presentation and discussion on latest developments in the field. Sessions typically address topics such as water efficiency (including the use of reclaimed water), drainage, standards/codes, and health aspects.

All SoPHE members and affiliates are warmly invited to attend and, if possible, present a paper (the call for abstracts will be issued formally in February 2012). Industrial members may also wish to consider sponsorship.

For further details, please contact Lynne Jack (l.b.jack@hw.ac.uk)
Preventing drinking water contamination from rainwater and greywater harvesting systems

Risks of contamination
Recycling greywater and collecting rainwater for use in toilet flushing or garden watering has an important part to play in achieving water efficiency targets in domestic premises and can reduce the cost of water supply in any metered premises. However, the Water Supply (Water Fittings) Regulations and Scottish Byelaws require adequate backflow prevention to prevent contamination of drinking water.

Rainwater contains dust, insects, bird droppings and leaf debris. Greywater from baths and showers may contain faecal micro-organisms, soap, hair etc. Neither is suitable for drinking and both are in the highest category of risk for backflow. These systems usually have a mains water back-up to provide water during dry weather. Wherever this connection is made to a storage tank or flushing cistern it must have fluid category five backflow protection, usually by using a Type AA or AB air gap (see the Backflow Protection box). “Teeing in” a connection directly from the mains supply isn’t permitted, even with a closed valve to isolate the two.

Contamination of drinking water
This isn’t a theoretical risk. In 2010 families in an eco-home development in Eastern England were drinking mains water contaminated with recycled rainwater, because the rain-water harvesting systems installed in their houses had direct cross-connections to the drinking water supply. Alerted by complaints of “sewage” odour in the tap water, the Water Supplier found that 87 homes (61% of the development) had illegal inter-connections of drinking water and rainwater pipework. In three houses faecal contamination was detected in samples of drinking water.

What went wrong?
In this housing development the proprietary rainwater systems were properly designed and manufactured, but problems occurred during installation. All the installations done by one firm of contractors had cross connections – suggesting persistent and deliberate deviation from the manufacturer’s installation instructions. Installers had illegally modified the rain water systems by cross connecting mains and rainwater pipework, with only closed valves between them. A closed valve is not a backflow prevention device and the installers committed criminal offences by putting in these cross connections.

Other breaches of the Water Fittings Regulations included inadequate marking of the pipework to distinguish the rainwater system from the drinking water pipes. In 95% of the houses the pipe marking wasn’t adequate, increasing the risk that someone doing alterations or extensions would connect to the wrong pipe.

Correct installation of recycled water systems
Use of a Water Fittings Regulations ‘approved plumber’ reassures the customer about the reliability of the work carried out and gives protection against prosecution in the event of errors. Details are available on the website: www.wras.co.uk of the Water Industry Approved Plumbers Scheme (WIAPS), administered by WRAS for most of the Water Suppliers.

Rainwater and greywater harvesting systems should only be installed in accordance with the manufacturer’s installation manual, without any adaptation. Do not install any direct cross-connections. Mechanical backflow devices like a check valve are not capable of protecting against this level of risk.

Fig 1. Example of a label which should be attached to pipework at a maximum of 0.5m intervals and at key connection points.

BACKFLOW PROTECTION AND CROSS CONNECTIONS
Where the back-up water supply from the drinking water system is made to a storage tank or flushing cistern, it must have fluid category five backflow protection, e.g. by a type AA or AB air gap.

Directly connecting pipes carrying rain water and mains water without a suitable airgap in between is illegal and dangerous. Relying on a shut valve between the pipes isn’t allowed, because a valve isn’t recognised as a backflow prevention device under the Water Fittings Regulations and valves can leak or be left open by mistake.

By Steve Tuckwell
Codes of Practice have been recently published by British Standards for rainwater harvesting [BS 8515:2009] and greywater systems [BS 8525:2010], giving good guidance on the design, installation, testing and maintenance of rainwater harvesting systems.

Pipework carrying reclaimed water or rainwater must be clearly identified throughout the premises and use of more than one method of marking is recommended.

Pipes are available with continuous marking applied during manufacture. If not using pre-marked pipe, labels should be attached at a maximum of 0.5m intervals (see fig 1) and at key connection points. Insulated pipes should be marked on the outside of the insulation, regardless of marking on the pipe itself.

At the points of use the appliances or outlets should be labelled as the examples below to indicate that the water is not for drinking.
UV Disinfection –

The importance of UV fluence in sizing of UV units

UV disinfection units are used extensively throughout the Building Services Industry for the chemical free disinfection of water. There can however, be a lack of clarity when deciding which UV unit to choose for a particular application, especially regarding questions like just how much UV energy is required in order to achieve an effective disinfection of a particular water. In order to understand this more fully we need to look at some of the factors that influence UV Unit selection.

UV Fluence.

UV dose, or more correctly, UV Fluence is a function of the amount of UV energy penetrating the water and the length of time the water is exposed to the UV light. It is this dose that determines how effectively pathogens will be killed. UV Dose (or Fluence) is expressed in mili-joules/square centimetre (mJ/cm²).

UV Dose = UV Intensity X Exposure time

In a UV disinfection unit, the UV intensity is the “amount” of UV energy the pathogen is exposed to and the exposure time is the residence time of the water in the UV reactor chamber.

In order to make comparison between the performances of different UV systems, it is important to understand how UV systems are sized and what factors influence their performance. Most UV Systems are sized in one of two ways:

1. Based on a minimum level of UV intensity. This sizing ensures that the UV intensity at the furthest location from the UV lamp is the minimum UV dose the system will provide. This UV dose is also known as a wall dose.

2. Based on a theoretical, calculated average level of UV intensity. This takes into account both the wall dose and the UV intensity in the area immediately adjacent to the UV lamp where the UV output is greatest.

There are a number of factors which directly affect the UV Dose delivered by a given UV unit and which influence the way in which the UV disinfection system is selected. These include:

Ultra-violet Transmittance (UVT) is a measure of how well water is able to transmit UV light. As UVT affects the intensity of the UV light reaching any water borne pathogens, the system design needs to factor in the quality of the water to be treated. UVT is affected by various contaminants and compounds that are able to absorb UV light, including: Suspended Solids, Soluble & insoluble Iron Water hardness and Tannins. Water from different sources can have different transmittances.

<table>
<thead>
<tr>
<th>TYPICAL APPLICATION</th>
<th>TYPICAL UVT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI/RO water</td>
<td>99%</td>
</tr>
<tr>
<td>Mains Drinking Water</td>
<td>85% - 95%</td>
</tr>
<tr>
<td>Well Water</td>
<td>75% - 95%</td>
</tr>
<tr>
<td>Harvested Rain Water</td>
<td>60% - 85%</td>
</tr>
</tbody>
</table>

Flow Rate. The faster the water flows through the UV reaction chamber the lower the UV dose will be. UV disinfection units need to be designed to be able to accommodate the peak flow rate through the reaction chamber likely to be experienced.

The Target Organism. Different pathogens require different amounts of UV energy in order to inactivate them.

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>UV Dose required to achieve a “3 log” or 99.9% reduction in pathogen activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legionella pneumophila (Legionnaire’s Disease)</td>
<td>12.6 mJ/cm²</td>
</tr>
<tr>
<td>Cryptosporidium parvum</td>
<td>&lt; 10.0 mJ/cm²</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>6.6 mJ/cm²</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>10.5 mJ/cm²</td>
</tr>
<tr>
<td>Blue-green Algae</td>
<td>420.0 mJ/cm²</td>
</tr>
</tbody>
</table>

So just how much UV energy is required for effective disinfection?

It is because of these factors that there is so much confusion as to how much UV dose is required for an effective disinfection. Most regulatory bodies specify a UV dose of 40 mJ/cm² in order to assure at least a “4 log” or 99.9% inactivation of any pathogenic micro-organisms. Current protocols include:

- German Association for Gas and Water (DVGW- W294, 2006).

The Goodwater Tucana range of UV disinfection units utilise high output UV lamps and are sized to deliver a UV dose of 30mJ/cm², at the specified UVT at the end of the lamp life. This is equivalent to a “3 log” or 99.9% inactivation of pathogenic micro-organisms.

It is important therefore that all relevant factors are taken into consideration when specifying or comparing UV disinfection units. The more information that is known about the application the easier it is to size or compare a UV system for a particular application.
**The Origins of the SoPHE Logo**

By Martin Shouler

Although SoPHE has been in existence for less than ten years, we can trace our lineage back to the Institution of Public Health Engineers (IPHE), formerly known as the Institution of Sanitary Engineers. During 2002, the embryonic society considered what might be a suitable design for its logo. A number of possible logos were reviewed by the steering group however, after careful consideration, the now familiar design for Society of Public Health Engineers was selected.

The SoPHE logo consists of three elements:

- The staff entwined with a snake
- The water pool
- The name of the society forming the roundel

The design harks back to the logo the IPHE and captures the twin pillars of the society: to protect health and hygiene and to use resources sustainably.

In Greek and Roman mythology, Hygeia was a stepdaughter of Asclepius, the god of medicine. Asclepius, Apollo’s son, was the god of ancient Greek medicine, and was frequently shown holding a staff entwined with a snake. Hygeia was the goddess of health, cleanliness and sanitation; it is from the goddess that we get the word hygiene. Interestingly, snakes were often associated with healing; their toxic venom was used in small doses as a cure and they were used more directly to lick the affected part of the patient. The staff and entwined snake form the first part of our twin pillars, our responsibility to protect public health and to provide a hygienic environment.

The snake coiled round the staff is also known as a symbol of the medical professions.

The water pool alludes to water as fundamental to life and that we are to manage it wisely. This forms the second part of our twin pillars, the sustainable use of resources.

Working with many other professional organisations with a similar interest, the society is recognised in its work in promoting the art and the science of public health and carries on the proud work of the Institution of Public Health Engineers.

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**‘In the beginning there was water’**

By Les Wilson

Considering water was the bane of my life as a young boy, I’m amazed it turned out to be part of my career path. Our local pond; in the summer became a breeding ground for knats and other biting critters, consequently, we spent our days playing cricket and scratching furiously; Inversely, the winter months would bring forth the occasional chilling experience if the ice gave way as you happened to be skating on it!

Water has long been recognised as a precious high demand resource and is odds on favourite to be precursor of a future war. Freshwater supplies are affected by a range of factors from catchment locations, drought and contamination; Nature, if left alone makes a splendid job of filtering out impurities and indeed the beavers of America in the 1800’s were doing a sterling job damming up rivers which eventually contributed to wet lands. Great tracks of forest provided perfect conditions creating moist enriched soils preventing erosion ……..sadly, the fur trade culled beavers by the millions and deforestation along with the destruction of natural habitats led to the great dust bowls of the dirty thirties.

Earlier this year, I enrolled on a two year part time National Diploma course in ‘Drinking Water Treatment’, opting for an extra strand to become a qualified drinking water assessor. The course has enlightened me as to how little I really know about water, not only on the science of water but also the environmental impact of industry. As Public Health engineers, we’re all aware of the scarcity of water but what about its quirkier side? What about water’s mysteries….

- Why is water most dense at 4°C?
- Why does water’s compressibility decline with increasing temperature until it reaches 46°C whereas most liquids the compressibility rises continuously with temperature?
- Why, unlike many liquids does water become less viscous, not more viscous at higher pressures?
- Why does the speed of sound in water increase with temperature up to 74°C and thereafter decline?
- Why is water’s specific heat capacity at a minimum at 35°C but increases as the temperature falls or rises, whereas the heat capacity of most other liquids rises continuously with temperature?

I guess we can say that no other liquid behaves quite as oddly. Even its molecular structure of one oxygen atom and two hydrogen atoms kinks at 104.5° degrees to each other – it has something to do with quantum mechanics apparently, but we won’t go down this road any further as I’ve lost myself already!

‘The killer in our midst’ - Water has killed indiscriminately over the centuries and still does today in poorer regions of the globe via cholera, typhoid fever, botulism, dysentery, salmonellosis, campylobacteriosis, hepatitis A, polio, bilharzia and a host of other deadly diseases.

Not all cities enjoy rigorous treatment processes found in the western world, which is why the sage advice of; ‘Don’t drink the local water’ is preached. Thankfully, we busy ourselves guarding against potential cross contamination issues and legionellosis taking all the necessary precautions to secure a buildings water system for its occupants.

Recently, one of our engineers returned from one of the pacific islands with severe abdominal pains, which he thinks he got from a drinking water from cooler dispenser in his hotel gym (another reason why keeping fit is bad for your body!). All that sparkles ‘ain’t necessarily wholesome!

But water is not simply just any old compound; it can present itself in a variety of exciting forms - a bit like my wardrobe!

We design for and specify a raft of water processes depending on its end use. Some of these processes involve softening, or even hardening depending on the pH. In health care we provide for RO water to washers and disinfectors and deionised for labs. We talk about polishing water and types of water such as Type one, two or three.

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In fact, it’s quite easy to see why water is such a fascinating subject to study and to practice.
SoPHE Regional Technical Seminars

SoPHE Scotland, forthcoming technical Seminars

Date  22nd Feb 2012
Time  18.00 – 20.00 (approx.)
Topic  Joint SoPHE/IHEEM event - Water treatment in healthcare applications
Sponsor  Hydrotec & H2O Solutions
Venue  B+B Edinburgh, 3 Rothesay Terrace, Edinburgh, EH3 7RY

SoPHE North West region, forthcoming technical Seminars

Date  21st March 2012
Time  18.00 – 20.00 (approx.)
Topic  Water Efficiency in Domestic & Commercial bathrooms
Sponsor  Twyford Bathrooms
Venue  The Rain Bar, 80 Great Bridgewater Street, Manchester. M1 5JG

SoPHE London region, forthcoming technical Seminars

Date  7th February 2012
Time  18.00 – 20.00 (approx.)
Topic  Selection and Application of Booster Sets
Sponsor  AquaTech Pressmain Limited
Venue  AECOM, 4th floor, Mid City Place, 71 High Holborn, London. WC1V 8QS

Date  6 March 2012
Time  18.00 – 20.00 (approx.)
Topic  Fats, Oil and Grease Control within drainage systems – The rising problems of FOG’s
Sponsor  Watling Hope
Venue  AECOM, 4th floor, Mid City Place, 71 High Holborn, London. WC1V 8QS

SoPHE South West region, forthcoming technical Seminars

A number of technical events are currently being planned for the South West Region, members will be informed as the dates and subjects are finalised

NEW MEMBERS

Rory Edwards   Affiliate
Rickesh Miyangar   Affiliate (transfer)
Daniel Costelloe   Affiliate (transfer)
James William Harding   Affiliate (transfer)
Wojciech Stefan Wielewski   Affiliate (transfer)
Robert Burgon   Honorary Fellow
Bruce Latimer   Member
Shaun Barry Cotgrove   Member
Giovanisingh Tauckoor   Member
Daniel Richard Smith   Student

On behalf of all the SoPHE regions, we would like to take this opportunity to thank everyone who has attended the technical seminars in 2011. A big thank you also goes to the Industrial Associates, who kindly assist in sponsoring the evenings, which is greatly appreciated.

AROUND THE BEND!

Trains will be wrapped in plastic and given power showers this winter to avoid snow chaos. “Power shower” systems, inspired by authorities in Finland, are being introduced at various rail maintenance depots to remove snow and ice from the undersides of trains more quickly.

The hot power-shower system – the first to be deployed in the UK are located within a 75 metres heated poly-tunnel capable of covering three carriages. This will effectively reduce the time taken to de-ice trains by more than half. They can defrost a three-carriage diesel unit in less than two hours compared with the normal six hours.

Showers of hot water – from a network of sprinklers – are used to melt the ice and allow maintenance and safety checks to be completed far more quickly and efficiently.

The clear plastic tunnels are traditionally used to protect young fruit and vegetable crops; however Rail bosses began using them in preparation to lessen the impact of the sub-zero temperatures on the rail fleet.

Charlie Shiells, managing director of network Rail’s maintenance contractor CPMS, said: “Our teams have been working flat out, 24 hours a day, employing the innovative poly-tunnel solution developed in partnership with Osprey Tunnels”.

Dave Leslie, of Osprey Tunnels, added: “We never envisaged our tunnels being used this way, but are delighted to help. The material is designed to trap heat working very well for this purpose.”

The investment in new equipment and initiatives is in direct response to customer feedback and lessons learned from last winter, the worst in 100 years. Services across the UK were significantly delayed or cancelled as snow almost closed down the entire transport system.

It is reported that up to three tonnes of snow and ice can lodge under trains after a single day’s operation in sub-zero temperatures. Last winter over 70 trains were damaged by frozen blocks of snow and ice. The trains had to be withdrawn from service until safety checks and repairs were carried out.

Finland routinely uses the hot water system in a bid to keep its rail network open during harsh Scandinavian winters and rail bosses were persuaded to bring them in after a fact-finding visit to Helsinki.
LATEST INDUSTRY PUBLICATIONS

WRAS: Marking and identification of pipework for water reuse systems. Issue 3
Details the colour coding and marking identification required in order to ensure that internal pipework and external distribution networks conveying reused water satisfy the requirements of the Water Supply (Water Fittings) Regulations and Scottish Water Byelaws, and comply with the appropriate British Standard.

British Automatic Fire Sprinkler Association: Frequently asked sprinkler questions about sprinklers. Addresses negative perceptions about sprinkler systems and considers the installation process, including requirements for installers. Issue 3 dated November 2011

BS EN 13244:2002 Polyethylene (PE). General. and for drainage and sewerage piping systems for water supply, and for drainage and sewerage under pressure.

BS EN 12201-1 to 5:2011 Plastics piping systems. Thermoplastics pipes and fittings for hot and cold water. Test method for the resistance of joints to pressure cycling. Publication Date 30 November 2011


A selection of SoPHE Professional Development Presentations from previously held regional events can be downloaded at: http://www.cibse.org.uk/sophe

SoPHE Scotland Update

By Paul Angus

In September, Dr Lynne Jack, SoPHE Scotland, delivered a presentation to the World Plumbing Council Conference in Edinburgh. This highly-successful international conference was hosted by Robert Burgon, Honorary Fellow of SoPHE, and SNIPEF, the Scottish and Northern Ireland Plumbing Employers Federation, and welcomed almost 400 delegates.

Dr Jack’s presentation, co-authored by Dr David Kelly, focussed on the use numerical modelling techniques to analyse the performance of siphonic rainwater drainage systems when subject to the impacts of climate change. Richard Bettie, a colleague of Dr Jack’s, presented a sister paper that outlined the influence of debris accumulation in gutters. The work reported by both was based on the use of Defra/UKCIP’s climate change projections, specifically Weather Generator precipitation data, applied to a case study site, with results illustrating the possible change in frequency of system failure.

SoPHE North West Update

The SoPHE North West region met on Wednesday 21st September 2011 - a presentation by Matthew Miller of Polypipe Terrain; the topic was “Underfloor Heating” which was again attended by an ‘enthusiastic’ audience. Various topics surrounding the subject matter were discussed including the comparison of timber v’s solid floor construction and the benefits of each, sustainability and the use of certifiable & recycled materials, and acoustics & the importance of complying with Part E of the Building Regulations.

SoPHE London Update

By Steve Vaughn

Peter White, Principal of the Hoare Lea Public Health Group provided an extremely interesting presentation to SoPHE London region on Thursday 4th October, with the theme of the presentation being “High Rise Drainage Design”.

Peter explained to the delegates that upon researching and drawing a blank with various international design codes, an eventual solution started to emerge closer to home. The work by the now late Professor John Swaffield of Herriot Watt University allowed Peter to understand how air in the system was behaving was the most important element. To further add intrigue, he soon realised the traditional rules of venting was not necessarily the best way of dealing with problematic conditions. The resulting journey entered the mysterious world of AIRNET drainage simulations and introduced him to Positive Air Pressure Attenuator (PAPAs) devices. On the 22nd November, Tyco Fire and Integrated Solutions presented to the region on the topic of Gaseous Fire Suppression Systems. The presentation was very well attended and provided an overview and explanation on the various components associated with a gaseous fire suppression system. The presentation also highlighted the relevant applications and main issues, including system design, system components and details, comparison of various types of chemical agents and the PED Directive. The discussion opened up to the floor with a very interesting Q&A session afterwards. The evening was sponsored by Tyco Fire and Integrated Solutions.

SoPHE South West Update

By David George

The third of a series of professional development events aimed to highlight the issue of corrosion and erosion of pipework in domestic water systems was held on Thursday 10th November. Colin Norman, Asset Manager at the Great Western Hospital Swindon chaired the meeting and summarised an insight into his experiences in Facilities Management, with David George’s presentation entitled, “Adjusting Long Held Beliefs Correcting Standard Practice”.

The presentation provided a revealing account on pinhole investigation in a commercial building, further discussing how knowledge gained through experience and lessons learnt can effectively further develop design codes. Furthermore, when problems occur these can usually lead to substantial legal claims being made, resulting in building services and public health engineer’s specifications being put under the microscope. David further provided an insight into investigative and forensic investigation work that he has been involved in providing delegates with a food for thought on past and future projects. The discussion continued afterwards over light refreshments.
THE STEERING COMMITTEE

Chairman: Chris Northey
chris.northey@bdsp.com

Vice Chairman: Ian Fellingham
ianfellingham@googlemail.com

Honorary Secretary: David Shaw
dsh@geneverandpartners.co.uk

Honorary Treasurer: Martin Shouler
martin.shouler@arup.com

Steering committee
Richard Mountney  Les Wilson
Bill Bumstead    Mike Darvill
Alan Neall      Alan Flight
Jonathan Gaunt  Steve Ingle
Steve Vaughan   Ashveen Jeetun
Jassim Daureeawo Maria, Delia Marginean
Roger Vincer   Geoff Chubb
Allan Homewood  Kris Wojcik

Regional Committee Contacts
North West: South West:
Malcolm Atherton David George
m.atherton@dssr.co.uk david.george@arup.com

Scotland:
Paul Angus
paul.angus@wspgroup.com
Joe Hendry
joe.hendry@burohappold.com
Lynne Jack
l.jack@hw.ac.uk

FEEDBACK
We would welcome any comments on this newsletter or contributions to future editions, in particular with regards to:

Future events for consideration
What should SoPHE be providing to our members
Items or comments you think may be worth raising or informing your fellow members
Technical articles from members, giving situations encountered and how they were overcome.

Please email comments to Jonathan Gaunt or Paul Angus at
jonathan.gaunt@arup.com
paul.angus@wspgroup.com