Specialist Group on Water Reuse

Newsletter: May 2015

Editorial Board: Michael Muston, John Anderson, Thomas Wintgens, and Jörg E. Drewes

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EDITORS NOTE

We would like to make this newsletter as relevant to all of you as the members of the IWA Specialist Group on Water Reuse and so it is important that we get a balance of news and technical input from across the continents that are represented by the Specialist Group.

If you have any news item that you think is relevant or wish to make a technical contribution (note this is not a technical journal but we do like to learn from the experience of others) or other feedback that will help to improve the value of the newsletter, please email your information to Michael Muston – qem@1earth.net (Newsletter editor)

MESSAGE FROM THE GROUP CHAIR

Dear Colleagues,

In less than six weeks, we will get together for our prime event, - the 10th IWA International Conference on Water Reclamation and Reuse in Harbin, China. Following the tradition of strong leading edge technical programs featuring recent developments in water reuse practices and technology advances in water reclamation, I am happy to report that we were able to put together an exciting program for the upcoming Harbin conference. You will find a pre-print of the conference program along with information regarding special features of the event in this Newsletter. A big thank you goes already to all members of the Scientific and Program Committee for their efforts in reviewing and selecting papers we received for this event!

I also would like to encourage any colleague and/or organization to submit a proposal to host the 11th Water Reclamation and Reuse Conference in 2017. Proposals to host this event are accepted until June 15, 2015. During the 10th Water Reclamation and Reuse Conference, the WRSG Management Committee will review all proposals received and shortly after the Harbin meeting announce the winner hosting the 2017 event.

Besides providing updates from our members across the globe on recent developments in water reuse, we also like to stimulate a discussion with a contribution from our former chair Prof. Rafael Mujeriego among water (reuse) professionals regarding the need for consistent units in technical and scientific communications, in particular water reuse. Prof. Mujeriego put together an interesting article entitled *"Effective and reliable communication: the International System (SI) of units"*, which is presented in this Newsletter. While this topic and its implication are relevant to any water professional, the issues related to inconsistent use of units seems in particular important to our efforts in harmonizing water reuse practices around the globe.

I am looking forward to welcome you all in Harbin, China. Please enjoy another issue of the WRSG Newsletter!

With best regards,

Jörg E. Drewes,
Chair, IWA Water Reuse Specialist Group

THE 10TH IWA WATER REUSE CONFERENCE

The 10th IWA International Conference on Water Reclamation and Reuse will be held in Harbin, China from July 5-9, 2015. http://www.iwareuse2015.org

Important dates
Deadline for early bird registration – June 5, 2015
Conference onsite registration date July 5, 2015
Technical tour July 9, 2015

Prof. Jörg E. Drewes, Chair, IWA Water Reuse Specialist Group:

On behalf of the Water Reuse Specialist Group Management Committee and the local organizing committee, it is my great pleasure to invite you all to participate in the 10th IWA International Conference on Water Reclamation and Reuse in Harbin, China from July 5-9, 2015.

With scarcity of locally available water supplies in many regions of the world, impacts from severe droughts, rising energy prices, the need to mitigate for greenhouse gas emissions, and requirements for environmental restoration, water reuse is becoming an increasingly important component of water resource management worldwide. This leading international conference in the field of water reuse will provide a platform to share and discuss the most recent advances in water reuse management (in particular new approaches in reuse regulations and risk management), industrial reuse, direct and potable reuse, emerging technologies in water reclamation, and water and energy nexus in water reuse. We will also hear about the latest developments in water reuse projects directed to water and food, reuse in developing countries as well as water reuse and its role in mitigating climate change impacts. For the first time, we will also launch a Water Reuse and Reclamation Research theme co-organized by our Young Water (Reuse) Professionals.

The technical program, which is organized in three concurrent sessions, is scheduled for July 5 to 8, followed by a technical tour to local water reclamation facilities on July 9. Please check out the preliminary program as well as further information regarding meeting logistics on the conference website.

We are very excited that IWA members and delegates will have the opportunity to share and discuss global technological innovations in water reuse for the first time in our host country China. I strongly encourage you to join this leading edge conference in water reuse and I look forward to welcoming you all in Harbin in July 2015.

Prof. Yu Tian, Chair of the Conference Organising Committee:

On behalf of the organizing committee, it is my great honour to invite all colleagues to attend the 10th IWA International Conference on Water Reclamation and Reuse in Harbin on July 5-9, 2015. Water resources crisis is one of the top obstacles restricting the world's sustainable development. Water reclamation and reuse has been considered as a promising way to mitigate the global water resources risks. Known as 'world factory', China has been dealing with problems like water resource shortage and water pollution control for over decades. Holding the IWA Water Reuse Specialist Group conference 2015 in China will be beneficial for reviewing the recent advances in water reuse research. It will also provide an interacting platform for exchange of ideas between scientists, engineers, environmentalists, managers, consultants, administrators and regulators, student researchers from other countries with the Chinese counterparts.

2015 IWA Water Reuse Conference Preliminary Program

5-9 July, Harbin China

(Update on 27 May, 2015)

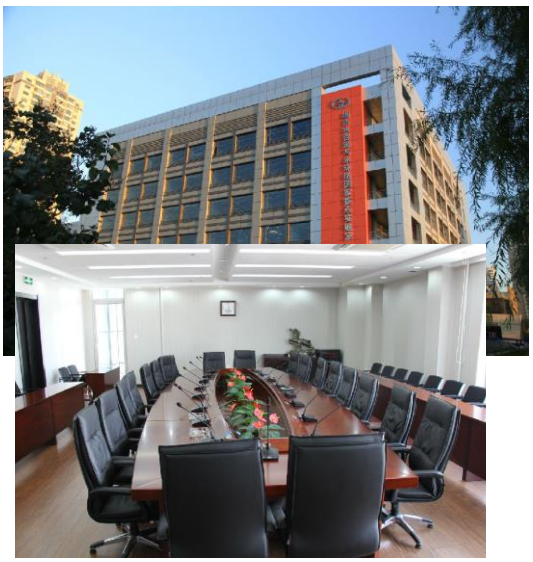
6 July 2015 (Monday)				
8.30-10.30		**OPENING CEREMONY**	**University President: Nanqi Ren, China** **Conf. Chair: Yu Tian, China** **IWA Reuse Chair: Jörg E. Drewes, Germany** **IWA HQ: Helmut Kroiss,Austria** **Governor, China**	
10.30-11.00		**BREAK**		
11.00-11.30		**KEYNOTE 1**	**Peter Cornel, Germany** **Semicentralized water reclamation and reuse for fast-growing urban areas**	
11.30-12.00		**KEYNOTE 2**	**TBD, China**	
12.00-12.30		**KEYNOTE 3**	**Ben Stanford, USA** **Quantifying The Robustness And Reliability Of Multiple Barriers In DPR Via Critical Control Points**	
12.30-13.30		**LUNCH**		
13.30-15.15		**Theme 1** **Water and Energy** **Moderator: Peter Cornel, Germany**	**Theme 2** **Reuse leading to GW Replenishment** **Moderator: Yu Tian, China**	**Theme 3** **Emerging Technologies for Water Reuse** **Moderator: TBD**
Sessions	**13.30-13.50**	**Kwang-Ho Choo, Korea** Aptus Water Reuse Practice Utilizing Chemically Enhanced Filtration With Renewable Energy	**Denpetkul Thuangsit, Japan** Evaluation Of The Human Enteric Viruses Removal And Inactivation In The Presence Of Soils	**Mindong Bai, China** Rapid treatment of algae-laden water toward drinking water using hydroxyl radicals (•OH) based strong ionization discharge
	13.50-14.10	**Jing Song, China** Cost Efficient CoPc/carbon Nanofiber Catalysts Enhanced Electricity Generation Microbial Fuel Cells	**Nandha Mital, UK** Water Quality Changes During Storage In A Sherwood Sandstone Aquifer	**Johann Müller, Germany** Sequential Biofiltration For Enhanced Removal Of Trace Organic Compounds During Water Reclamation
	14.10-14.30	**Yan Y.B., China** Removal Of Methylene Blue From Wastewater Using Low Cost Material	**Uwe Hübner, Germany** The Combination Of Ozonation And Managed Aquifer Recharge: Fate Of The Oxidation By-product Bromate	**Shi Xiao-Jie, China** AOC Variation In A2O- BAF Treated Effluent Of Domestic Wastewater
	14.30-14.50	**Li Xiaohu, China** Enhanced H2 Production From Fermentation Effluent Using Double Anodes Microbial Electrolysis Cell	**Le Corre Kristell, UK** Impact Of Pre-treatment Technologies On The Performance Of Soil Aquifer Treatment	**Qing Li, China** Effect And Evaluation Of Rechlorination On Chlorine Decay Rates In reclaimed Water
	14.50-15.15	**DISCUSSION**	**DISCUSSION**	**Jianguo Cheng, China** Degradation of odor compounds GSM and 2-MIB using •OH radicals based on AOP-strong ionization discharge
15.15-15.45		**BREAK/POSTER SESSION**		
15.45-17.15		**Theme 4** **Young Water Reuse Professionals/Research** **Moderator: Olivier Lefevbre, Singapore**	**Reuse leading to GW Replenishment** **Moderator: TBD**	**Emerging Technologies for Water Reuse** **Moderator: Xiachang Wang, China**
Sessions	**15.45-16.05**	**Ahn Yongtae, Korea** Removal Of Iopromide And Its Intermediates From Ozone-treated Water Using Granular Activated Carbon	**Daniel Goodwin, UK** Public Support For Wastewater Reuse Explored Through Online Commentary - A Case Study For London	**Yu Tian, China** A Novel Membrane Bio-electrochemical Reactor For Wastewater Reuse And Membrane Fouling Mitigation
	16.05-16.25	**Rahmawati Suphia, Japan** Reduction Level Of N-nitrosodimethylamine Concentration And Its Formation Potential By SAT	**Wei Liangliang, China** Fate Of Sulfamethoxazole In Secondary Effluent From WWTP During Soil Aquifer Treatment	**Wei Chun-Hai, Saudi Arabia** Organic Micro-pollutants Removal Via Anaerobic MBR With Ultrafiltration And Nanofiltration
	16.25-16.45	**Julie Mendret, France** Ozonation Of NF Concentrates For Wastewater Reuse: Influence Of Matrice On Oxidation Rate Of PhACs.	**Yan Tao, USA** Enhancing Soil Microbial Iron Reduction For Efficient Pathogen Removal in Reclaimed Water	**Ma fang, China** Heterogeneous Catalytic Ozonation Of Refinery Wastewater Over A Mn-Cu Oxide Catalyst
	16.45-17.05	**Liu Xiuhong, China** On-line Process Control Of Denitrifying Biofilter For Achieving Stable Wastewater Reclamation And Reuse	**Yufeng Xu, China** Fate Of Four PPCPs In Contact With Biofiltration-Sorption And Biodegradation	**Ulf Miehe, Germany** Impact Of Tertiary Treatment With Ozone Or Powdered Activated Carbon On Disinfection For Wastewater
	17.05-17.15	**DISCUSSION**	**DISCUSSION**	**DISCUSSION**
18.00-20.00		**Welcome Banquet**		

7 July 2015 (Tuesday)							
8.00-10.00		Theme 5 Urban Reuse Moderator: Peter Cornel, Germany		Theme 6 Direct and Indirect Potable Reuse Moderator: Shane Snyder, USA		Theme 7 Reuse in Developing Countries Moderator: Kwang-Ho Choo, Korea	
Sessions	8.00-8.30	KEYNOTE 4	Xiaochang Wang, China Towards a paradigm shift in urban water reuse – Concepts and practices of water cycle management	KEYNOTE 5	Jeff Mosher, USA Implementation of IPR in the U.S. - San Diego, LA, Santa Clara, Tucson, and El Paso	KEYNOTE 6	Han-Qing Yu, China Spectroscopic analysis on the organic matters in the effluent of wastewater treatment bioreactors
	8.30-8.50	Johanna Tolksdorf, Germany First Implementation Of A SEMIZENTRAL - Resource Recovery Centre		Rafael Mujeriego, Spain Incidental Water Reuse In A Catalonian Watershed: Living Downstream		Hu Jiangyong, Singapore Disinfection Of Evaporated Source-separated Urine Using Chlorine, UV And UV/TiO2	
	8.50-9.10	Andrzej Listowski, Aruba Rationale for economic assessment and implementation of urban water reuse scheme		Jörg E. Drewes, Germany The California Direct Potable Reuse Initiative -- From Initiation To Implementation		Wu Shu-Ying, Chinese Taipei Recovery Of Diluted Surfactant-based Draw Solutions In Forward Osmosis Process By Two-stage Ultrafiltration/nanofiltration System	
	9.10-9.30	Shao Jiahui, China Recovery Of Dye Molecules From Aqueous Solutions With Negatively Charged Ultrafiltration Membranes		Stuart Khan, Australia Probabilistic Assessment of Contaminant Removal for Direct Potable Reuse		Elaru Joshua, Uganda Household Grey Water Reuse Systems In East Africa	
	9.30-9.50	PANEL		Juergen Menge, South Africa Guidelines For Monitoring, Management And Communication Of Water Quality In Direct Potable Reuse		PANEL	
	9.50-10.00	DISCUSSION		DISCUSSION		DISCUSSION	
10.00-10.30		BREAK/POSTER SESSION					
10.30-12.00		Theme 8 Emerging Technologies for Water Reuse Moderator: Hu Jiangyong, Singapore		Direct and Indirect Potable Reuse Moderator: Jeff Mosher, USA		Reuse in Developing Countries Moderator: TBD	
Sessions	10.30-10.50	Kwang-Ho Choo, Korea Granular Iron Oxide Beads To Enhance Phosphorus Removal For Water Reuse		Jörg E. Drewes, Germany A Novel Characterization Tool Using 3D-fluorescence To Facilitate Increased Recycled Water Recharge		Martin Zimmermann, Germany Connecting Sanitation, Wastewater Treatment And Water Reuse For Urban Agriculture In Namibia	
	10.50-11.10	Chen Shiao-Shing, Chinese Taipei A Novel Draw Solution For Nutrient Removal In Attached Growth Biofilm - OMBR System		Ben Stanford, USA How Do We Train And Certify Operators For Direct Potable Reuse?		Kätzl Korbinian, Germany Biochar And Woodchips As Alternative Filter Material For Wastewater Treatment With Roughing Filter	
	11.10-11.30	TSANG, Yiu Fai, Hongkong, China Pollutants Removal of Biofilter with Cyperus alternifolus for Water Reuse		Stefani McGregor, USA Public Outreach And Education, Potable Reuse		Preudhomme Hugues, Qatar Innovative Global Water Fingerprinting Of Ultra-trace Elements Before Treatment And Reuse Strategy	
	11.30-11.50	ZH Huang, China Rejection of PPCPs by HTCC-Ag/PES composite membranes with enhanced antibacterial properties		PLANNING SESSION Quo Vadis – Direct Potable Reuse? – Developing the scope of a consolidated DPR workshop stream for the 2016 IWA World Congress, Brisbane, Australia		Xue Tonglai, China The Current Status And Policies Of Beijing Reclaimed Water Utilization	
	11.50-12.00	DISCUSSION				DISCUSSION	
12.00-13.00		Lunch					
13.00-13.30		POSTER SESSION					
13.30-15.15		Theme 9 Young Water Reuse Professionals/Research Moderator: Stuart Khan, Australia/Nils Horstmeyer, Germany		Theme 10 Water and Food/Irrigation Moderator: Rafael Mujeriego, Spain		Theme 11 Industrial reuse Moderator: Ben Stanford, USA	
Sessions	13.30-14.00	KEYNOTE 7:	Fang Zhang, China Harvesting energy from waste streams using (bio)electrochemical systems	KEYNOTE 8	Ray Chittaranjan, USA Vegetable Crop Uptake Of Pharmaceuticals During Irrigation With Recycled Water	KEYNOTE 9	Josef Lahnsteiner, Austria Water Recycling At The Panipat And Essar Refineries, India - Not Completed Yet
	14.00-14.20	Nils Horstmeyer, Germany Alternative Energy-Efficient Treatment Schemes For Potable Water Reuse		Simona Consoli, Italy Assessing the impact of wastewater reuse scenarios on soil-plant systems		Bengao Li, China Technical progress of wastewater reusing to circulating cooling water system in China's petrochemicals industry	
	14.20-14.40	Hasnain Ghalib, Pakistan Performance Evaluation Of Sequencing Batch Reactor (SBR) On Real Wastewater Of A University Campus		AL-isawi Rawaa, UK The Impact Of Using Treated Wastewater Contaminated With Hydrocarbon On The Growth Of Chili Plants		S.T. Wang, China Preparation of CuO-FeOx/γ-Al2O3 catalyst and catalytic degradation of Quinoline in Coal-chemical wastewater by Catalytic wet peroxide oxidation	
	14.40-15.00	Jia Ai, USA In Vitro Bioassays To Evaluate The Bioactivity In Recycled Water		Lourdinha Florencio, Brazil Potential Of Wastewater In Changing Soil Characteristics And Providing Nutrients To Corn Plants		Sari Maria, Singapore Water-reuse Risk Assessment Program (WRAP): A Refinery Case Study	
	15.00-15.15	Fu Ying, China Application performance of a new coagulant in wastewater reuse		Katharina Müller, Germany Water quality monitoring for agricultural water reuse		Tang Anzhong, China Progress of membrane bioreactor (MBR) technology on refining wastewater treatment	
	15.10-15.15	DISCUSSION		DISCUSSION		Jun Xu, China Ultrafiltration Of Produced Water From Polymer Flooding With Hydrophilized PVDF Membrane For Reuse	
15.15-15.45		BREAK/POSTERSESSION					
15.45-17.15		Young Water Reuse Professionals/Research Moderator: TBD		Water and Food/Irrigation Moderator: Gideon Oron, Israel		Industrial reuse Moderator: TBD	
Sessions	15.45-16.05	Chen Rong, China Risk assessment of wastewater reuse for replenishing an urban landscape lake by disability adjusted life year (DALY)		Wei Liangliang, China Utilization Of Artificial Recharged Effluent For Irrigation: Pollutant Removal And Risk Assessment		Fan Dongqi, China Studies On Treatment Of Reverse Osmosis Concentrate By Fered-Fenton Process	
	16.05-16.25	Jun Zhang, China Microbial fuel cell assisted membrane bioreactor for wastewater treatment, sludge reduction and sludge modification		Mario Takayuki Kato, Brazil Cultivation Of Two Types Of The Bean Phaseolus Vulgaris L. Irrigated With Treated Domestic Sewage		Ahmed Khalid, Sudan Khartoum Refinery Water Recycling	
	16.25-16.45	Do Anh, Vietnam The Performance Of Gaslift MBR For Slaughterhouse Wastewater Treatment		Wolfgang Seis, Germany Micobial Risk Analysis In Agricultural Water Reuse		Zhang Jianqiao, China A Fenton-like System Combined By Peroxymonosulfate And Co2+ For The Decolorization Of Methyl Orange	
	16.45-17.05	Ren Xiaoli, China Wastewater Treatment And Reuse In Straw Papermaking Industry		Lavrnic Stevo, Spain Agricultural Reuse Of Constructed Wetlands Effluent In South Europe: Guidelines And Recent Studies		Jin Limei, China Fabrication Of Positive NF Membrane And Its Application in Produced Water	
	17.05-17.15	DISCUSSION		DISCUSSION		DISCUSSION	
18.00-20.00		Dinner					

8 July 2015 (Wednesday)							
8.00-10.00		Theme 12 Emerging Technologies Moderator: Kim In, Korea		Theme 13 Risk management and regulations Moderator: Stuart Khan, Australia		Industrial reuse Moderator: Josef Lahnsteiner, Austria	
Sessions	8.00-8.30	KEYNOTE 10	Shane Snyder, USA Monitoring Of Reuse Processes Using Surrogates, Indicators, And On-Line Sensors	KEYNOTE 11	Hong-Ying Hu, China Bio-toxicity and Bio-stability of Reclaimed Water: Evaluation and Control	KEYNOTE 12	TBD, UNESCO or WHO TBD
	8.30-8.50	Chen Shiao-Shing, Chinese Taipei Enhanced Forward Osmosis Processes By Surfactant-based Draw Solution		Cirelli Giuseppe, Italy Comparing wastewater tertiary treatment options to match reuse standards in agricuature		Liu Zheng, China Brief introduction of water-saving in the petroleum & chemical corporations in China	
	8.50-9.10	Kim In, Korea Synthesis Of Polydopamine-Graphene Nanosheet Membrane With Ceramic Substrate For Forward Osmosis		Nasser Abidelfatah, Israel Comparative Removal Of Giardia Cysts, F+ Coliphages And Bacteria Indicators By Wastewater Treatment		Yuling Zhang, China The Influence Of Inorganic Phosphorus On Mineral Scales In Cooling Water System Using SMRW	
	9.10-9.30	Lee Byoung Ho, Korea Molecular Weight Changes Of Organic Matter By The DOF System In Wastewater Treatment		Chavez Alma, Mexico Ecotoxicity Estimate Of Non-conventional Water Sources And Treated Water (nanofiltration) Via The Response Of Vibrio Fischeri And Danio Rerio		Gilabert-Oriol Guillem, Spain Wastewater Reuse For Industrial Applications In Cooling Towers	
	9.30-9.50	Jie Yao, China Pervaporation Process With PDMS/PVDF Hollow Fiber Composite Membrane To Recycle Phenol From Coal Char		Daniel Goodwin, UK Applying The Water Safety Plan To Non-potable Water Reuse - Towards A Conceptual Framework		Xie Jiacai, China Study On High Silica Produced Water From Heavy Oil Recovery Recycling To Steam Generators	
	9.50-10.00	Feng Chuanping, China Impact Of C/N And Aeration On Partial Nitrification In Integrated Biological Aerated Filter		Songyan Qin, China Isolation Of A Halotolerant Bacterium And Its Bioaugmentation In High-salty Wastewater Treatment		Zhang Shujuan, China The Treatment Of Dyeing Wastewater With The UV/AA Process	
10.00-10.30		BREAK/POSTER SESSION					
10.30-12.00		Emerging Technologies Moderator: Hong-Ying Hu, China		Risk management and regulations Moderator: Greg Oliver, Australia		Industrial reuse Moderator: Jie Yao, China	
Sessions	10.30-10.50	Kang Joon-Wun, Korea Evaluation Of Various Electrodes For Electrochemical Treatment		Simin Li, China Fate And Ecotoxicological Assessment Of PACs In Wastewater Advanced Treatment In Handan		Ding Jing, China Electrochemical Removal Of Ammonia And Nitrate From The Effluent Of Industrial WWTP Aiming At Reuse	
	10.50-11.10	Chiayu Wu, Japan Trace Amounts Of Mercury Remove From Contaminated Wastewater By Novel Forward Osmosis Process		Mokhtar Guizani, Japan Assessment of endotoxin removal from reclaimed wastewater using coagulation flocculation		Ding An, China Effect Of DO On The Performance Of Low-pressure Gravity-driven Membrane Bioreactor (GDMBR)	
	11.10-11.30	Lefebvre Olivier, Singapore Electro-Fenton Treatment Of Wastewater From The Electronics Industry		Zhuo Chen, China Fluorescence Analysis Of Chinese Centralized Water Reuse Systems: Implications For Cross-Connection		Zhao Zhiwei, China An Au-doped Magnetic Catalyst: Synthesis And Degradation Of P-nitrophenol In Fenton-like System	
	11.30-11.50	Uwe Hübner, Germany Evaluation Of The Persistence Of Transformation Products From Ozonation Of Trace Organic Compounds		Yan Tao, USA Risk Management And Regulations Of Water Reuse In The United States		Zhang Ruijun, China Advanced Treatment Of Produced Water With Nanofiltration For Polymer Flooding Oil Extraction	
	11.50-12.00	DISCUSSION		DISCUSSION		DISCUSSION	
12.00-13.00		Lunch					
13.00-13.30		POSTER SESSION					
13.30-15.15		Emerging Technologies Moderator: Heng Liang, China		Risk management and regulations Moderator: TBD		Theme 14 Water reuse planning/Climate Change Mitigation Moderator: Michael Muston, Australia	
Sessions	13.30-14.00	Hu Jiangyong, Singapore LED/UV/TiO2 Photocatalysis Of Sulfamethoxazole And Trimethoprim: Residual Antibacterial Activity And Toxicity, Antibiotic Resistance Genes Development In Subsequent SBR Proces		Gao Tingting, China The Disease Burden Assessment Associated With Wastewater Reuse In Siyuan University In Xi'an, China		Heather Smith, UK Governance Challenges For Water Reuse In Europe	
	14.00-14.20	Kim In, Korea Hydroxypropyl-beta-cyclodextrin: A New Biological Control Agent For Membrane-based Water Treatment		Ren Xianghao, China Toxicity Study Of Municipal Treatment Plant Effluent On Human BE(2)-M17 Cells		Gideon Oron, Israel Greywater Reuse Modeling via Analytic Hierarchy Process (AHP)	
	14.20-14.40	Jenny Wang, Germany Evaluation Of The Role Of Ozone And Ozone Combined With Media Filtration In Different Reuse Treatment Trains		Ebrahimi Fariba, Iran Network Analysis To Resolve Policy Issues, Management, Social And Economic Order In Integrated Water		Navarro Ines, Mexico Options To Reduce GHG Emissions From Wastewater Treatment Plants And Impact Of Wastewater And Sludge Reuse	
	14.40-15.00	Hong-Ying Hu, China The UV/chlorine Oxidation For DOM Removal In Reclaimed Water		Echigo Shinya, Japan Fate Of Selected Pharmaceuticals And Their Metabolites In Soil Aquifer Treatment		Zhao Xu, China Impact Of Inter-provincial Trade On China's Embodied Water Pollution	
	15.00-15.15	Junfeng Li, China An Experimental And CFD Methodology For The Design Of A New Two-storey Settling Tank		DISCUSSION		Lei Bin, China Configuration And Application Of Online Instruments In Integrated Membrane Water Treatment System	
15.15-15.45		BREAK					
15.45-16.30		CLOSING SESSION					
17.30-20.00		Dinner					
9 July 2015 (Thursday):		TECHNICAL TOUR					

About the conference venue

The conference will be held in the Building of State Key Lab of Urban Water Resource and Environment, Harbin Institute of Technology (SKLUWRE, HIT).



About Harbin

Harbin is the capital and largest city of Heilongjiang province in China's northeast region, as well as the tenth most populous city nationally. Harbin serves as a key political, economic, scientific, cultural and communications hub in Northeast China with4.71 million inhabitants in the urban area, while the total population of the sub-provincial city is up to 9.93 million. Harbin is the commodity grain base of China. Harbin owns one of the Three Blank Earth Terrains in the World.

Harbin is the city of fashion and city of music. Harbin is a combination of Eastern and Western cultures, recognized as "the City of Music", "Oriental Moscow" and "Oriental Paris". As early as the1920s, the city had been considered China's fashion capital because of the earliest access to European classical music in China. In 2010, Harbin was declared a UNESCO "City of Music" as part of the Creative Cities Network and Harbin Summer Music Concert has become a national concert festival in China.

Harbin, an intrinsic touristic city, has its unique natural scenery and cultural heritage. In Harbin, there is a wealth of wetland resources and it is the hometown of red-crowned cranes. What's more, it is also the home to Siberian tigers. More than 500 cultural landscapes and the surrounding natural reserves in Harbin together constitute the unique characteristics of tourism in northern China. The unique winter snow and ice impressed your stay in Harbin. Culture and lifestyle of Harbin will be your favour.

CONFERENCE REPORTS

Voices from the 1st Asian Symposium on Water Reuse – Technology Renovation and Risk Management

Beijing, China, April 24-25, 2015

Report by Conference organiser: Prof. Hong-Ying Hu -Tsinghua University China

The First Asian Symposium on Water Reuse was held successfully in Tsinghua University, Beijing, China, between April 24-25, 2015, which was also supported by the IWA WRSG. During the symposium, 15 invited speakers gave presentations with a wide range of topics. More than 100 delegates from both academics and industries attended the symposium. The symposium was launched by Tsinghua University (China), Kyoto University (Japan) and Korea Institute of Science and Technology (KIST, South Korea), and is planned to be held once a year. The Asian Symposium on Water Reuse aims to provide a unique platform for regional communication, as well as discussion on state-of-art ideas, models and innovations in the water reuse field.

The symposium was opened with a presentation by Prof. Hong-Ying Hu, the chairman from Tsinghua University, China. Prof. Hu addressed issues of global water shortage and challenges facing wastewater reclamation and reuse in China, especially emphasizing the water reuse quality standard and safety assurance.

The first two sections for invited keynote presentations were hosted by symposium co-chairmen, Prof. Hiroaki Tanaka from Kyoto University and Prof. Seockheon Lee from KIST. Three keynote speakers, Prof. Yi Qian, the academician of Chinese Academy of Engineering, Dr. John Radcliffe, the honorary research fellow of CSIRO Australia, and Prof. Jörg E. Drewes, the chair of the IWA Water Reuse Specialist Group, introduced their countries' experiences on water reuse and highlighted the current challenges and opportunities in the water reuse field.

Prof. Qian delivered a detailed presentation on critical issues for plan and design of water reuse system. She pointed out that water reuse has many advantages which is an important way for alleviating water resource shortage and mitigating water pollution problems. Water reuse is also a cost-effective approach that should be considered as the priority. Her recommendations include the establishment of wastewater discharge standard, implementation of source separation and small and medium sized sewer systems, and improvement of wastewater treatment efficiency. She also stressed the importance and necessity of using eco-toxicity indicators for safety assessment of reclaimed water quality.

Dr. Radcliffe introduced examples of reclaimed water use for different applications in several cities of Australia. He raised a question that the future of desalination and dual reticulation systems in Australia might be uncertain due to high cost and ongoing management risks. In his very interesting exposition, reclaimed water is seen as an acceptable option to augment drinking water supply.

Prof. Drewes gave an overview of the present knowledge on various applications of water reuse. He identified the prospect, drivers and design principles of potable water reuse and addressed the importance of water quality safety plans. The concept of integrated urban water and energy management was also emphasized.

In the following presentation sections, researchers from both academics and industries of Singapore, China, Japan and Korea, described their latest research findings and new initiatives on water reuse. The presentations covered topics of membrane systems, advanced water treatment systems, removal of hazardous and toxic by-products, integrated intelligent satellite system, water, energy and valuable resource recovery, risk management and toxicity-based safety evaluation of reclaimed water quality.

The symposium participants also visited the Qinghe Water Reclamation Plant in Beijing, where reclaimed water is mainly used for landscaping in the Olympic Forest Park nearby. The visit impressed all attendance deeply, especially for the advanced wastewater treatment process and disinfection technologies applied in the plant.

The First Asian Symposium on Water Reuse was concluded by a heated discussion on the various topics that were presented. This symposium was a great opportunity for sharing knowledge and building networking to better understand and manage the water reuse challenges and opportunities in both Asia-Pacific and global regions. Through deep discussion on new concepts and theories, novel technologies and holistic management models, innovation capabilities on water reclamation and reuse in Asian countries can be further strengthened. Thereby, voices from the symposium will contribute to the sustainable development of water reuse. *"I do believe that these opportunities to share experiences in water reclamation and reuse and to think about solutions to common problems will have a long lasting impact to Asian countries, the region but also other countries outside Asia",* said Prof. Jörg E. Drewes.

Presentation scene of the First Asian Symposium on Water Reuse

Delegates presented at the First Asian Symposium on Water Reuse

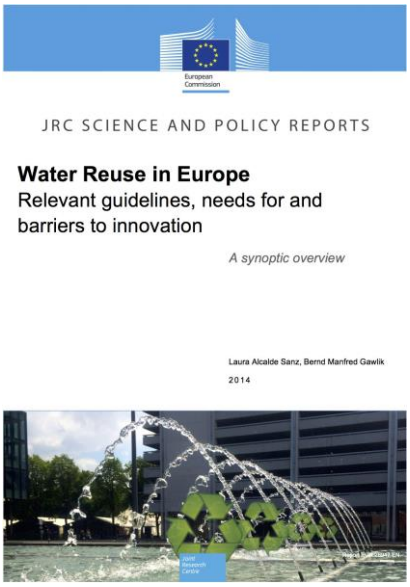
Site visit of the Qinghe Water Reclamation Plant, Beijing, China.

GUIDELINES FOR BETTER WATER REUSE IN EUROPE

The Joint Research Council (JRC) has recently published a report which provides guidelines to implement water reuse in Europe, and analyses the associated technical, environmental, health and socioeconomic challenges to such reuse

Report by Jörg E. Drewes

Following the identification of the need to find innovative solutions to water challenges in the urban, industrial and agriculture contexts, an EU regulatory instrument for water reuse has to be developed by 2015. Despite the water reuse applications already developed in many countries, there are still a number of barriers, which prevent the widespread implementation of water reuse in Europe and on a global scale. These barriers will have to be overcome. The scope of this JRC Science and Policy Report prepared by Laura Alcalde-Sanz and Bernd Gawlik, was to analyze the technical, environmental and socioeconomic challenges of related to water reuse as an innovation option. It presents and compares the most relevant national and international guidelines on water reuse, and evaluates existing water reuse standards in EU Member States. Furthermore, the report presents a risk-based management approach for wastewater reuse and identifies needs for technological and regulatory innovation as well as barriers to overcome.



The report can be accessed and downloaded following the link below.

Source: https://ec.europa.eu/jrc/en/news/guidelines-better-water-reuse-europe

EU COST Action New and Emerging Challenges and Opportunities in Wastewater Reuse (NEREUS)

Report by Jörg E. Drewes

A new group within the European Cooperation in Science and Technology (COST) program was recently established that is going to focus on new and emerging challenges and opportunities in wastewater reuse (ES1403). The cost action is chaired by Dr. Despo Fatta-Kassinos with the Nireas International Water Research Center University of Cyprus.

The primary objective of this COST Action Group is to develop a multi-disciplinary network to determine which of the current challenges related to wastewater reuse are the most concerning ones in relation to public health and environmental protection, and how these can be overcome. In particular NEREUS will focus on the fate and transport of antibiotic resistant bacteria and genes (ARB/ARG) in water reuse applications. NEREUS is structured into five working groups:

WG1: Microbiome and mobile antibiotic resistome in treated wastewater and in downstream environments

WG2: Uptake and translocation of organic microcontaminants and ARB&ARG in crops

WG3: Effect-based bioassays required for wastewater reuse schemes

WG4: Technologies efficient/economically viable to meet the current wastewater reuse challenges

WG5: Risk assessment and policy development

For more information, please visit the NEREUS website or contact Dr. Fatta-Kassinos at: info@nereus-cost.eu

Source: http://www.nereus-cost.eu

TECHNICAL ITEMS

EDITORS NOTE

The following article from Prof. Rafael Mujeriego is intended to promote discussion on the important issue of the SI units that we use (with different interpretations in different parts of the industry and different regions) and the need to develop a common approach where practical. This article is also posted on the Water Wiki site and you are encouraged to contribute to the discussion.

We would like to publish other possible discussions that we should have within the Specialist Group on topics that are of importance to us all and so invite contributions on other topics that you feel are of importance and deserve further discussion within the SG.

Effective and reliable communication: the International System (SI) of units

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Diversity of measurement units, particularly related to volume and volume-related quantities, has become common in papers and presentations from the Water Reuse Specialists Group activities. Metric system units, like cubic meter (m^3), traditionally used by authors from numerous European countries, share written space in technical documents with new measurement units (megaliters, gigaliters), adopted by authors from non-metric system in their attempt to assure global communication, aside their traditional English-derived units of measurements.

However, that positive transition to a global system of measurements units seems to have ignored the existence of an international system of units, the Meter Convention, that has been providing guidance in those same matters since it was first established in 1875 in Paris by representatives of seventeen nations, including the United States of America (http://www.bipm.org/en/worldwide-metrology/). Currently, the Meter Convention treaty includes 51 Member States, representing all the major industrialized nations. The original Meter Convention was modified slightly in 1921 and remains the basis of all international agreements on units of measurement.

The Meter Convention created the International Bureau of Weights and Measures (BIPM), an intergovernmental organization under the authority of the General Conference on Weights and Measures (CGPM) and the supervision of the International Committee for Weights and Measures (CIPM). The BIPM acts in matters of world metrology, particularly concerning the demand for measurement standards of ever increasing accuracy, range and diversity, and the need to demonstrate equivalence between national measurement standards.

Practical Benefits of Common Units

Adequate expression of measurements is of vital importance to all. Measurement science (metrology) is not the exclusive domain of scientists, but also of engineers and the public at large when they quantify and communicate the results of their activities. Scientific and engineering studies and projects, as well as services, supplies and communications that we use in our common daily life rely ultimately on metrology for their efficient and reliable operation. The economic success of nations depends upon the ability to manufacture and trade precisely made and tested products and components (http://www.bipm.org/en/worldwide-metrology/). Engineering proposals, designs, drawings and specifications rely on clearly quantified measurements to assure they achieve their expected costs,

construction and ultimate objectives.

The practical difficulties encountered by authors of non-metric systems when converting to the SI system has resulted in inadequate notations and controversial units of measurement, like those raised by Prof. Peter J. le B. Williams in Volume 13 of the Bulletin of the American Society of Limnology and Oceanography (2004), where he called for the correct use of SI of units. Those comments, made about 10 years ago, are readily applicable to volume units that have become common in journals and reports published by the International Water Association. The reluctance by authors to use some high volume SI units in papers refereed within the IWA editorial system has even seen how corrections introduced during the review process were subsequently reversed by authors, without deserving any remarks from editors.

The non-SI units have also entered international institutions like the European Commission, as it appears in the recent evaluation of the Public Consultation on water reuse, where the following expressions are used: " 946 Mm3/year wastewater treated and reused in Europe (2.4 % of all treated wastewater)" and also "Total water abstraction in EU 247 billion m³/year". The appearance of "billion" introduces an additional source of potential error, considering the quite different meaning it has in English (thousand million) as compared to other languages like French and Spanish (an English trillion). It is not uncommon to see inadequate use or translation of those units in articles and books in technical and economic publications.

The Water Environment Federation (WEF), the American Water Works Association (AWWA) and the International Water Association (IWA) jointly published the updated 4th edition of WEF Manual of Practice no. 6 (2011) with the objective of establishing units of expression that are universally understandable and readily comparable for design, operation and performance factors in the water sector. However, the Manual of Practice no. 6 considers the "liter" as an accepted unit for volume (Table 1.3, page 4), while recognizing that "incorporation of this unit makes the whole system incoherent", and explicitly indicates (bottom of Table 2.1, page 9) that "use of (hecto SI prefix) should

be avoided", extending the same proposal to other three prefixes, without indication for such recommendation, and in contrast to the official updated publications of the SI (http://www.bipm.org/en/publications/si-brochure/).

Figure 1. Volume and surface of an underground water storage, as reported in "World Water: Water Reuse and Desalination/Spring 2014", page 12.

To further illustrate the diversity of issues that an inconsistent use of measurement units can raise, Figure 1 shows the use of abbreviated "megaliter" units, indicated with the "ml" symbol, a measurement unit that most readers associate to a milliliter. It is not hard to imagine the friendly smile that some readers may have shown after realizing that such notation refers to the size of an underground water storage. It is evident that a widely known and clear set of guidelines on the use of the SI units should have aided reviewers, editors and printers to produce a correct figure.

Aside from the surprise that such units may produce to readers, it is reasonable to anticipate that a continued use of inadequate measurement units may result in significant scientific and technical errors, interpretation uncertainties, contractual controversies, economic disputes and serious legal responsibilities. Just the same variety of critical issues that the founders of the Metric Convention wanted to resolve when they established the early treaty in 1875.

OBJECTIVE

The main objective of this contribution is to present a brief summary of the contents and use of the SI units, particularly in the water sector, describing the base units, their prefixes, the derived units and the accepted units, as described in official documents published by the BIPM and NIST. This call for adoption of SI units should also be extended to editors and manuscript preparation personnel, so we are all fully involved in producing the highest quality of scientific and technical documents, regardless of the geographical area in which we work.

THE "SI" OF UNITS

The updated (2014) 8th edition of the SI Brochure defines and presents the International System of Units (http://www.bipm.org/en/publications/si-brochure/), as published by the BIPM. The SI consists of a set of base units, their prefixes, the derived units and the accepted units, as described in following sections, adapted from the electronic version of the updated (2014) 8th edition of the SI Brochure.

The SI base units are a choice of seven well-defined units which by convention are regarded as dimensionally independent. The base units of the SI are listed in Table 1, which relates the base quantity to the unit name and unit symbol for each of the seven base units, using US English.

Table 1. SI base units, adapted from the updated (2014) 8th edition of the SI Brochure.

Base quantity		**SI base unit**	
Name	**Symbol**	**Name**	**Symbol**
length	*l*, *x*, *r*, etc.	meter	m
mass	*m*	kilogram	kg
time, duration	*t*	second	s
electric current	*I*, *i*	ampere	A
thermodynamic temperature	*T*	kelvin	K
amount of substance	*n*	mole	mol
luminous intensity	I_v	candela	cd

Derived Units

Derived units are formed by combining the base units according to the algebraic relations linking the corresponding quantities. The names and symbols of some of the units thus formed can be replaced by special names and symbols which can themselves be used to form expressions and symbols of other derived units. The number of quantities in science is without limit, and it is not possible to provide a complete list of derived quantities and derived units. However, Table 2 lists some examples of derived quantities, and the corresponding coherent derived units expressed directly in terms of base units, using US English.

Table 2. Examples of coherent derived units in the SI expressed in terms of base units, adapted from the updated (2014) 8th edition of the SI Brochure.

Derived quantity		**SI coherent derived unit**	
Name	**Symbol**	**Name**	**Symbol**
area	A	square meter	m^2
volume	V	cubic meter	m^3
speed, velocity	v	meter per second	m/s
acceleration	a	meter per second squared	m/s^2
wavenumber	σ, $\tilde{\nu}$	reciprocal meter	m^{-1}
density, mass density	ρ	kilogram per cubic meter	kg/m^3
surface density	ρ_A	kilogram per square meter	kg/m^2
specific volume	v	cubic meter per kilogram	m^3/kg
current density	j	ampere per square meter	A/m^2
magnetic field strength	H	ampere per meter	A/m
amount concentration [(a)], concentration	c	mole per cubic meter	mol/m^3
mass concentration	ρ, γ	kilogram per cubic meter	kg/m^3
luminance	L_v	candela per square meter	cd/m^2
refractive index [(b)]	n	one	1
relative permeability [(b)]	μ_r	one	1

(a) In the field of clinical chemistry this quantity is also called substance concentration.

(b) These are dimensionless quantities, or quantities of dimension one, and the symbol "1" for the unit (the nu

Prefix Names and Symbols

Table 3 lists all approved prefix names and prefix symbols to form the names and symbols of the decimal multiples and submultiples of SI units as adopted over the years by the CGPM.

Table 3. SI prefixes, adapted from the updated (2014) 8th edition of the SI Brochure.

Factor	**Name**	**Symbol**	**Factor**	**Name**	**Symbol**
10^1	deca	da	10^{-1}	deci	d
10^2	hecto	h	10^{-2}	centi	c
10^3	kilo	k	10^{-3}	milli	m
10^6	mega	M	10^{-6}	micro	µ
10^9	giga	G	10^{-9}	nano	n
10^{12}	tera	T	10^{-12}	pico	p
10^{15}	peta	P	10^{-15}	femto	f
10^{18}	exa	E	10^{-18}	atto	a
10^{21}	zetta	Z	10^{-21}	zepto	z
10^{24}	yotta	Y	10^{-24}	yocto	y

Prefix symbols are printed in roman (upright) type, as are unit symbols, regardless of the type used in the surrounding text, and are attached to unit symbols without a space between the prefix symbol and the unit symbol. With the exception of da (deca), h (hecto), and k (kilo), all multiple prefix symbols

are capital (upper case) letters, and all submultiple prefix symbols are lower case letters. All prefix names are printed in lower case letters, except at the beginning of a sentence.

The grouping formed by a prefix symbol attached to a unit symbol constitutes a new inseparable unit symbol (forming a multiple or submultiple of the unit concerned) that can be raised to a positive or negative power and that can be combined with other unit symbols to form compound unit symbols. The following examples illustrate those rules:

$1\ cm^{-1} = 1\ (cm)^{-1} = 1\ (10^{-2}\ m)^{-1} = 10^{2}\ m^{-1} = 100\ m^{-1}$

$2.3\ cm^{3} = 2.3\ (cm)^{3} = 2.3\ (10^{-2}\ m)^{3} = 2.3 \times 10^{-6}\ m^{3}$

$1\ hm^{3} = 1\ (hm)^{3} = 1\ (100\ m)^{3} = 1\ (10^{2}\ m)^{3} = 10^{6}\ m^{3} = 1\ 000\ 000\ m^{3}$

Accepted Non-SI Units

As the updated (2014) 8th edition of the SI Brochure clearly indicates, the SI is a system of units that provides the internationally agreed reference framework in terms of which all other units are defined. It is recommended for use throughout science, technology, engineering and commerce. The SI base units and the SI coherent derived units, including those with special names, have the important advantage of forming a coherent set, with the effect that unit conversions are not required when inserting particular values for quantities into quantity equations. Because the SI is the only system of units that is globally recognized, it also has a clear advantage for establishing a worldwide dialogue. Finally, it simplifies the teaching of science and technology to the next generation, if everyone uses this system.

Nonetheless the CGPM recognizes that some non-SI units still appear in the scientific, technical and commercial literature, and will continue to be used for many years. Some non-SI units are of historical importance in the established literature. Other non-SI units, such as the units of time and angle, are so deeply embedded in the history and culture of the human race that they will continue to be used for the foreseeable future. Individual scientists should also have the freedom to sometimes use non-SI units for which they see a particular scientific advantage in their work. For these reasons it is helpful to list some of the more important non-SI units, as is done below. However, if these units are used it should be understood that the advantages of the SI are lost.

The updated (2014) 8th edition of the SI Brochure highlights that the inclusion of non-SI units in the Brochure does not imply that the use of non-SI units is to be encouraged. For the reasons stated in the Brochure, SI units are generally to be preferred. It is also desirable to avoid combining non-SI units with units of the SI; in particular, the combination of non-SI units with the SI to form compound units should be restricted to special cases in order not to compromise the advantages of the SI. Finally, when any of the non-SI in Table 6 are used, it is good practice to define the non-SI unit in terms of the corresponding SI unit.

Table 4 includes the traditional units of time and angle. It also contains the hectare, the liter (in US English) and the tonne, which are all in common everyday use throughout the world, and which differ from the corresponding coherent SI unit by an integer power of ten. The SI prefixes are used with several of these units, but not with the units of time.

Table 4. Non-SI units accepted for use with the International System of Units, as adapted from the updated (2014) 8th edition of the SI Brochure.

Quantity	Name of unit	Symbol for unit	Value in SI units
time	minute	min	1 min = 60 s
	hour [(a)]	h	1 h = 60 min = 3600 s
	day	d	1 d = 24 h = 86 400 s
plane angle	degree [(b,c)]	°	1° = (π/180) rad
	minute	'	1' = (1/60)° = (π/10 800) rad
	second [(d)]	"	1" = (1/60)' = (π/648 000) rad
area	hectare [(e)]	ha	1 ha = 1 hm^2 = 10^4 m^2
volume	liter [(f)]	L, l	1 L = 1 l = 1 dm^3 = 10^3 cm^3 = 10^{-3} m^3
mass	tonne [(g)]	t	1 t = 10^3 kg
length	astronomical unit [(h)]	au	1 au = 149 597 870 700 m

(a) The symbol of this unit is included in Resolution 7 of the 9th CGPM (1948).

(b) ISO 80000-3:2006 recommends that the degree be divided decimally rather than using the minute and the second. For navigation and surveying, however, the minute has the advantage that one minute of latitude on the surface of the Earth corresponds (approximately) to one nautical mile (defined in Table 8).

(c) The gon (or grad, where grad is an alternative name for the gon) is an alternative unit of plane angle to the degree, defined as (π/200) rad. Thus there are 100 gon in a right angle. The potential value of the gon in navigation is that because the distance from the pole to the equator of the Earth is approximately 10 000 km, 1 km on the surface of the Earth subtends an angle of one centigon at the centre of the Earth. However the gon is rarely used.

(d) For applications in astronomy, small angles are measured in arcseconds (i.e. seconds of plane angle), denoted by the symbol as or "; also used are milliarcseconds, microarcseconds, and picoarcseconds, denoted by the symbols mas, µas, and pas, respectively, where arcsecond is an alternative name for second of plane angle.

(e) The unit hectare, and its symbol ha, were adopted by the CIPM in 1879 (PV, 1879, 41). The hectare is used to express land area.

(f) The liter, and the symbol lower-case l, were adopted by the CIPM in 1879 (PV, 1879, 41). The alternative symbol, capital L, was adopted by the 16th CGPM (1979, Resolution 6) in order to avoid the risk of confusion between the letter l (el) and the numeral 1 (one).

(g) The tonne, and its symbol t, were adopted by the CIPM in 1879 (PV, 1879, 41). In English speaking countries this unit is usually called "metric ton".

(h) The astronomical unit of length was redefined by the XXVIII General Assembly of the International Astronomical Union (Resolution B2, 2012).

SUMMARY

The SI of units provides an internationally agreed reference framework that is recommended for use throughout science, technology, engineering and commerce. The SI base units and the SI coherent derived units form a coherent set that prevents unit conversions when inserting particular values for quantities into quantity equations. The SI is the only system of units globally recognized, has a clear advantage for establishing a worldwide dialogue and simplifies the teaching of science and technology to next generations.

Although national organizations can legitimately set measurement units in which non-SI units are accepted, international organizations like IWA and particularly expert groups like the Water Reuse Specialist Group should strongly promote the use of SI units among authors, reviewers and editors as

to assure that scientific and technical documents reach the highest level of effective and reliable communication, when they are edited, presented and published.

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AGL's CSG irrigation program successfully completed

AGL which is one of Australia's leading integrated energy companies and is the largest stock exchange listed owner, operator and developer of renewable energy generation in the country, has successfully completed its two-year irrigation program in Gloucester in northern NSW, during which more than 50 megalitres of produced water from its gas exploration activities were beneficially re-used.

AGL started the main Tiedmans Irrigation Program in April 2013, and will end the program to blend produced water with freshwater for irrigation of fodder crops and pasture on 30 April 2015.

John Ross, Hydrogeology Manager, said a decision was made not to extend the program after careful consideration. "We've been really happy with the results from the Tiedmans Irrigation Program and as we only have a very small volume of produced water left, we made the decision not to apply for an extension of the program".

As at the end of March AGL have blended 52 megalitres of produced water from our earlier exploration programs with freshwater, and used 116 megalitres of water in total to irrigate crops including lucerne, triticale and forage sorghum, and an area of improved pasture. More than 1000 bales of silage/fodder has been produced to support local agriculture production activities.

Monitoring reports have confirmed that there has been no impact to adjacent surface water resources and underlying groundwater. There have been no adverse impacts to soils and the fodder has been proven to be suitable as supplementary feed for cattle and sheep.

The remainder of the produced water will stay in one of the holding ponds at Tiedmans and be treated by reverse osmosis when the water treatment plant is built as part of Stage 1 of the Gloucester Gas Project.

During the two years of the program, AGL monitored the produced water, storage dams, blended water and irrigated crops (as well as local water receptors and soils), resulting in 15 reports currently online.

Source: AGL Website: http://www.agl.com.au/about-agl/media-centre/article-list/2015/april/agls-csg-irrigation-program-successfully-completed

Better Quality of Life in Megacities - The SEMIZENTRAL Project Receives a GreenTec Award 2015

An update on the SEMIZENTRAL project featured in the last newsletter.

SEMIZENTRAL, an international research project that is anchored at the TU Darmstadt, has received one of the GreenTec 2015 awards. Dr. Susanne Bieker's team (at the Chair headed by Prof. Peter Cornel) was awarded the prize in the category "Urbanization" because it has made an impressive contribution to improving the quality of life in megacities. This award, which is not financially endowed and can be presented in 14 categories, is one of the most highly regarded environmental and business prizes in Europe.

The population of cities, worldwide, is increasing by more than one million people each week. This

presents enormous challenges for supplying sufficient amounts of clean drinking water, for treating wastewater, for proper waste disposal, and for limiting energy consumption. Frequently, inadequate infrastructures, or their complete absence, endanger people's quality of life and the environment.

SEMIZENTRAL stands for a new concept that integrates supply and disposal systems at a time of explosive urban growth and that is particularly efficient in terms of energy use and resource protection: it enables individual urban districts to flexibly scale infrastructures for (waste)water and garbage, according to the city's growth rate and, simultaneously, to save water and energy. The first reference plant, worldwide, for a semi-centralized "Resource Recovery Center" was opened in April 2014 in Qingdao, China, and has operated successfully since then. Experience gained there can be transferred globally to other megacities. The TU Darmstadt is cooperating with Tongji University Shanghai and the Qingdao Technological University.

With the aid of the SEMIZENTRAL concept, water can be re-used and, consequently, the demand for potable water is reduced by at least 30%. Energy savings and the production of energy from sewage sludge and organic waste make it possible to operate the semi-centralized "Resource Recovery Center" autarkically, i.e., independently of energy from external sources. The expansion of the necessary infrastructure can be matched with the specifics of the district's development – this guarantees optimal system utilization and reduces the risk of planning mistakes based on incorrect assumptions about future developments.

Background. GreenTec Awards

The idea for the GreenTec Awards came, in 2008, from two engineers who wanted to establish a highly regarded prize for successful environmental protection initiatives. The annual award presentation ceremony attracts considerable media attention and is thus an effective platform for spotlighting intelligent environmental technologies and involvement with environmental issues. An interdisciplinary jury that comprises representatives from business, science, relevant organizations, and the media decides on nominations for and winners of the competition.

Source: www.semizentral.de

Receiving the award - Dr. Stefan Franzke (Berlin Partner für Wirtschaft und Technologie), Prof. Chen Hongbin (Tongji University), Dr. Susanne Bieker (SEMIZENTRAL), Prof. Martin Wagner (IWAR), Christian Rocke (Messe München)

COMING EVENTS AND ANNOUNCEMENTS

In 2015, members of the WRSG are actively involved in several reuse related meetings. These include:

12th IWA Leading Edge Conference on Water and Wastewater Technologies

30 May – 3 June 2015, Hong Kong, China

IWA organizes leading edge technology conference annually and the next one is from 30 May to 3 June, 2015 in Hong Kong China. One of the 8 sessions we have is on "Direct potable reuse". Details at http://www.let2015.org

10th IWA Water Reclamation and Reuse Conference

5 July – 9 July 2015, Harbin, China

IWA organizes this conference biannually, which represents the prime event of the Water Reuse Specialist Group. The 10th IWA Water Reclamation and Reuse Conference is scheduled from July 5-9, 2015 in Harbin China. Details at http://www.iwareuse2015.org

NEWS FROM IWA HQ

Unlock the power of the IWA Network

Launching www.iwa-network.org

Responding to and embracing the rapidly evolving digital realities of our world, the IWA has launched a new website: www.iwa-network.org. The website provides a rich digital experience for all users, those who already know the IWA and those who are new to the association. The website is still in its BETA testing phase but will be launched fully in 2015.

We look forward to seeing you at the www.iwa-network.org

Welcome to the IWA Online Network Database

The IWA Online Network Directory is your gateway to access the full IWA 10,000-strong global network of professionals. You will be able to connect on an ongoing basis, share content, grow your network and take the steps you need to help you enhance and achieve your professional goals.

Click here to gain access to the Online Network Directory.

The IWA Online Network Directory is your portal through which you will be able to actively manage your engagement within the network including the ability to renew your membership for 2015.

However, this is just the start. In 2015, we will take your IWA network experience to new heights. We want to enable you to reach out in a more meaningful way to connect with people across the network based on your preferences and interests. We have ambitious plans, and new features will be added regularly.

2015 IWA Membership Renewals

As you may have seen, the renewal process is quite different this year so this is a quick reminder of the key steps to proceeding to your IWA renewal in case you have not done so already:

1. Login into the Online Network Directory and go to My Profile > Settings
2. Go to Account Summary tab and review your personal data.
3. In the Renewal tab select your 2015 membership package and proceed to payment via credit card or PayPal.

Once you have completed your renewal, a receipt of your membership will be available to download under the Renewals tab in your profile.

If you experience any difficulties with your renewal then we are here to help! Feel free to

send us an email at members@iwahq.org or call us on +31 (0) 70 8903524 and we will get back to you as quickly as possible.

IWA Water and Development Congress & Exhibition, Jordan, 18 – 22 October 2015 --- Water Security for Sustainable Growth

Water security is one of the most critical issues the world is confronted with today. Emerging economies and developing countries face some of the biggest and most disruptive water challenges, yet they provide some of the greatest opportunities to get 'water' right.

The Water and Development Congress & Exhibition organized by the International Water Association (IWA) (Jordan, 18 – 22 October 2015), is the global event on water solutions focusing on emerging economies and developing countries. The event brings together thought leaders, decision makers, leading scientist and business representatives from within and outside the water sector.

Connecting science and research with the private sector and financial institutions, the Congress acts as a catalyst for sustainable water development. It provides a space where water professionals can meet and exchange information and know-how. It brings to the fore the latest regulatory initiatives and leading-edge practices. It presents new research findings, technology developments and business opportunities.

Website: www.iwa-network.org/WDCE2015/

IWA World Water Congress and Exhibition, Lisbon, 21-26 September, 2014

The IWA World Water Congress & Exhibition in Lisbon was a hugely successful gathering that brought together more than 5,500 water professionals from 109 countries. Wide ranging discussions on the challenges and opportunities facing water management led to the sharing of knowledge on best practices and new technologies; and by connecting a diverse set of stakeholders it fostered further cooperation between industry, science and technology to accelerate change and find lasting solutions.

The Congress positioned water as the fuel of sustainable, profitable industry, the catalyst of productive agriculture, the liquid force that turns or cools turbines, and the source of life on land, in rivers, and through estuaries that nourish the oceans. In short, it revealed water as the currency of the 21st century.

Videos of the Keynote presentations from the Congress are available at https://vimeo.com/iwahq

A new Congress Synthesis Report will be available to download from the www.iwa-network.org

The "Lisbon Charter": Improving water services through innovations in regulation

Water is considered to be the greatest risk facing the world over coming decades; a risk of high likelihood and even higher impact. For water managers, regulators and policy makers, there is acritical opportunity for a transformation in public policy and the regulation of water services to meet these future challenges. Securing the future sustainability of water, sanitation and wastewater services depends upon realising this transformation. The "Lisbon Charter" offers a vision for reforming water management that will help us achieve that goal.

Public water policies and regulation remain obscure to many people, yet they determine how water services are delivered, the quality of those services and the price we all pay for them. Water policies and regulation can provide a critical breakthrough in reforming the water sector and attracting investments for much-needed infrastructure and human resource development.

A new set of guiding principles for sound public policies and regulation for water services, adopted by the International Water Association, promises to deliver a vital stimulus for the water sector to innovate. These principles, embedded in the "Lisbon Charter", offer a practical pathway for delivering improved water and sanitation services. These principles are equally adaptable in any water utility anywhere in the world.

Updating public policies and regulation forms part of a government's primary responsibility for public policy making. Today a wide variety of models of public water policy and regulation exist around the world. The "Lisbon Charter" brings the experience of these together and sets out five leading principles:

Water management forms a key factor in sustainable development;
Accountability and transparency form the basis of reliable water services;
Only long term investments and cost recovery can create and sustain water services;
Financial, social and environmental aspects of water resources underpin water services provision;
Collective actions of interdependent stakeholders make water services provisions succeed.

The "Lisbon Charter" goes beyond the role of governments. It covers the broader rights, responsibilities and good practices for each group of stakeholders by defining the roles of governments and public administrations, regulatory authorities, service providers, water professionals and end-users. For all stakeholders to accept their roles and live-up to the associated expectations continues to be a challenge for the water sector.

The "Lisbon Charter" provides a vision for this, but it is also an opportunity for all stakeholders to work from a solid and practical base and renew their contribution to the delivery of safe water, sanitation and wastewater services to all citizens around the world.

The IWA Water Wiki!

www.iwawaterwiki.org

The WaterWiki Blog has been full of exciting news and features.

There is an ongoing feature of guest posts from journal authors every Friday, covering topics such as:

- The Bullwhip effect in water demand management: taming it through an artificial neural networks-based system
- Performance comparison between two equal stabilization ponds operating with and without a sludge layer
- Carbon footprint of water reuse and desalination: a review of greenhouse gas emissions and estimation tools
- The City Blueprint of Amsterdam: an assessment of integrated water resources management in the capital of the Netherlands
- An enquiry into the place of systems analysis in the politics of water and environment

An upcoming feature on the blog will interview some of the authors of IWA Publishing's newest titles, asking them about themselves, their books and their next steps.

Furthermore, there have been many other exciting features and articles, including positive book reviews, an article covering EU Reference Documents on Good Practices on Leakage Management and research into tap water.

Elsewhere on the Wiki, articles covering all aspects of the water industry continue to be submitted and edited by our fantastic team of editors.

As always, please feel free to contact me (acruden@iwap.co.uk) with any questions.

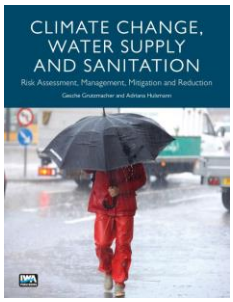
Alex Cruden
IWA WaterWiki Community Manager
acruden@iwap.co.uk

NEWS FROM IWA PUBLISHING

New and Forthcoming Publications on Water Reuse

Climate Change, Water Supply and Sanitation: Risk Assessment, Management, Mitigation and Reduction

Adriana Hulsmann, Gesche Grützmacher, Gerard van den Berg, Wolfgang Rauch, Anders Lynggaard Jensen, Victor Popovych, Mario Rosario, Lydia S. Vamvakeridou-Lyroudia, Dragan A. Savic



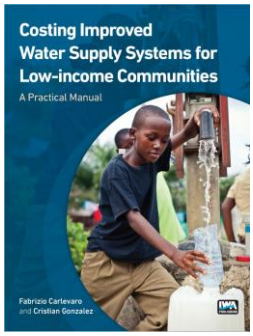
ISBN: 9781780404998
IWA Members price: £109 / $196 / € 147

http://www.iwapublishing.com/books/9781780404998/climate-change-water-supply-and-sanitation-risk-assessment-management-mitigation

This book pulls together the final outcomes and recommendations from the PREPARED project that originated from the WSSTP (Water Supply and Sanitation Technology Platform) thematic working group Sustainable Water Management in Urban areas. The PREPARED project confirms and demonstrates the technological preparedness of water supply and sanitation systems of ten cities in Europe and also Melbourne and Seattle to adapt to the expected impacts of climate change. It shows that the water supply and sanitation systems of cities and their catchments can adapt and be resilient to the challenges of climate change; and that the technological, managerial and policy adaptation of these PREPARED cities can be cost effective, carbon efficient and exportable to other urban areas within Europe and the rest of the world.

Costing Improved Water Supply Systems for Low-income Communities: A Practical Manual

Fabrizio Carlevaro, Cristian Gonzalez



ISBN: 9781780407210
IWA members price: £74.00/ $133.00/ €100.00

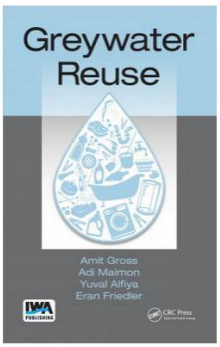
http://www.iwapublishing.com/books/9781780407210/costing-improved-water-supply-

systems-low-income-communities-practical-manual

This manual and the free downloadable costing tool is the outcome of a project identified by the Water, Sanitation and Health Programme (WSH) of the World Health Organization (WHO) faced with the challenge of costing options for improved access, both to safe drinking water and to adequate sanitation.

Greywater Reuse

Amit Gross, Adi Maimon, Yuval Alfiya, Eran Friedler



ISBN: 9781780407357
IWA members price: £49.00/ $88.00/ €66.00

http://www.iwapublishing.com/books/9781780407357/greywater-reuse

Greywater Reuse examines the features and implications of greywater reuse scientifically, quantitatively, and thoroughly. Based on the authors' extensive studies of treatment facilities in urban and rural environments, development of greywater treatment systems, and research of potential environmental and health risks posed by greywater at different treatment levels, this authoritative text:

- Describes the chemical, physical, and microbial properties of greywater
- Covers the treatment and removal of greywater pollutants, providing case studies of common methods
- Identifies the risks involved in greywater use and proposes regulatory measures to help reduce these risks
- Reviews the greywater management strategies, policies, and legislation of several different countries
- Discusses the prevailing public perception and willingness to adopt various uses of greywater
- Analyzes the economic impact of greywater reuse from both the consumer and national perspectives

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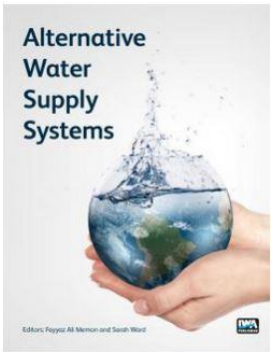
Alternative Water Supply Systems

A best practice guide to RO

Fayyaz Ali Memon and Sarah Ward



ISBN: 9781780405506
IWA members price: £109.00 / $196.00 / €147.00

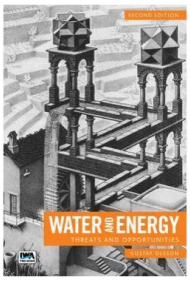
http://www.iwapublishing.com/books/9781780405506/alternative-water-supply-systems

Alternative Water Supply Systems covers technical, social, financial and institutional aspects associated with decentralized alternative water supply systems. These include systems for greywater recycling, rainwater harvesting, recovery of water through condensation and sewer mining. A number of case studies from the UK, the USA, Australia and the developing world are presented to discuss associated environmental and health implications.

The book provides insights into a range of aspects associated with alternative water supply systems and an evidence base (through case studies) on potential water savings and trade-offs. The information organized in the book is aimed at facilitating wider uptake of context specific alternatives at a decentralized scale mainly in urban areas.

Water and Energy: Threats and Opportunities - Second Edition

Gustaf Olsson



ISBN: 9781780406930
IWA members price: £74.00 / $133.00 / €100.00

http://www.iwapublishing.com/books/9781780406930/water-and-energy-threats-and-opportunities-second-edition

Rapid and important developments in the area of energy - water nexus over the last two to three years have been significant. This new edition of *Water and Energy: Threats and Opportunities* is timely and continues to highlight the inextricable link between water and energy, providing an up-to-date overview of the subject with helpful detailed summaries of the technical literature.

Water and Energy has been up-dated throughout and major changes are:

- new chapters on global warming and fossil fuels, including shale gas and fracking.

- the consequences of the Deepwater Horizon accident in the Mexican Gulf and the Niger Delta oil spills.
- New developments in hydropower
- continued competition between food, water and energy

SELECTED RESEARCH REPORTS

Full-Plant Deammonification for Energy Positive Nitrogen Removal
WERF Report INFR6R11
Author(s): WERF
Publication Date: 15 Oct 2013 • ISBN: 9781780405117
Available as eBook only

http://www.iwapublishing.com/template.cfm?name=isbn9781780405117&type=category

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Tools for Evaluating the Benefits of Green Infrastructure for Urban Water Management
WERF Report INFR5SG09b
Author(s): Neil Weinstein
Publication Date: 15 Nov 2012 • ISBN: 9781780400525
Pages: 30
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