14/10/2014 - Fórum leva a São Paulo palestrantes internacionais e apresenta soluções para a potabilização da água a partir de efluentes

Evento promove palestras e debates sobre processos de reaproveitamento de efluentes para fins potáveis em períodos de escassez

Em meio à atual crise no Sistema Cantareira e à crescente necessidade de novos processos para a gestão dos recursos hídricos, a cidade de São Paulo recebe, nos dias 15 e 16 de outubro, o I Fórum Técnico Internacional "Reúso Direto e Indireto de Efluentes para Potabilização", na Faculdade de Saúde Pública da Universidade de São Paulo (FSP/USP). O evento reúne especialistas nacionais e internacionais para apresentar e discutir as principais alternativas e a viabilidade do reaproveitamento de efluentes para produção de água potável no Brasil.

Sete palestrantes internacionais participam do Fórum e expõem experiências de reaproveitamento de água em países como Estados Unidos, México e Namíbia, sendo este último o país onde a potabilização da água a partir de efluentes é um dos métodos de reaproveitamento mais bem-sucedidos do mundo.

Além das experiências internacionais, o evento conta com a participação de especialistas brasileiros como o professor Victor Wünsch Filho, diretor da Faculdade de Saúde Pública da USP, o professor Pedro Mancuso, também da FSP/USP, e Ivanildo Hespanhol, diretor do Centro Internacional de Referência em Reúso de Água e professor da Escola Politécnica da USP. Otávio Okano, presidente da Cetesb, Daniel R. Fink, Procurador de Justiça do Ministério Público do Estado de São Paulo e Alceu Bittencourt, presidente da Associação Brasileira de Engenharia Sanitária e Ambiental (ABES-SP), também participam das palestras e debates.

Três painéis compõem o Fórum, que se inicia com a “Disponibilidade Hídrica das Regiões Metropolitanas Brasileiras e Plano de Segurança da Água”. O primeiro painel conta com palestras de Gesner de Oliveira, economista e ex-presidente da Sabesp, Alceu Bittencourt, presidente da ABES-SP e a engenheira sanitarista Roseana Maria Garcia Lopes de Souza.

O segundo painel, com o tema “Experiências Internacionais”, leva ao evento as apresentações de especialistas estrangeiros. Além dos casos positivos de potabilização de água em outros países, este painel promove o debate sobre as questões regulatórias decorrentes deste processo e tem como um dos destaques a apresentação sobre a experiência de reutilização de água na Califórnia.

No Brasil, o reúso de efluentes já é amplamente utilizado para fins industriais. O projeto Aquapolo, que abastece o Polo Petroquímico de Capuava, por meio do reaproveitamento dos efluentes domésticos (esgoto) da ETE (Estação de Tratamento de Esgotos) ABC da Sabesp, é exemplo disso. O último painel do evento, “Aspectos Técnico-Operacionais e Legais para Implantação do Reúso para Potabilização”, discute a viabilidade deste método de potabilização de água para uso potável no Brasil.

Com debate entre os professores Pedro Mancuso, Ivanildo Hespanhol, Otávio Okano e Daniel R. Fink, o evento se encerra com a discussão sobre as barreiras nas leis brasileiras, os impedimentos e receios da população e os processos viáveis para o País, principalmente em períodos de escassez de água como a atual crise em São Paulo.

O I Fórum Técnico Internacional "Reúso Direto e Indireto de Efluentes para Potabilização” é

realizado pelo portal Tratamento de Água em parceria com o Centro de Apoio à Faculdade de Saúde Pública da Universidade de São Paulo (CEAP/FSP).

Programa
Quarta-feira - 15 de Outubro
08:00 - 08:30: Recepção e Credenciamento
08:30 – 09:00: Sessão de Abertura :
Prof. Victor Wünsch Filho
Diretor da Faculdade de Saúde Pública da USP
Prof. Pedro Mancuso
Prof. Faculdade de Saúde Pública USP / CEAP
Eng. Eduardo Pacheco
Diretor do Portal Tratamento de Água

Painel 1: Disponibilidade Hídrica das Regiões Metropolitanas Brasileiras e Plano de Segurança da Água
09:00 – 10:00: Alceu Guerios Bittencourt
Diretor Presidente da COBRAPE e Presidente da ABES - São Paulo. Especialista em planejamento de recursos hídricos
10:00 – 10:30: Coffee-break
10:30 – 11:15: Fernando Marcato - Foi secretário Executivo de Novos Negócios da SABESP. Advogado com atuação em investigações corporativas anti-corrupção/ compliance de Debevoise & Plimpton - Londres. Professor do Pós GV Law Direito da Infraestrutura e Professor da Clínica de Direito Público dos Negócios da EDESP - FGV. Mestre em Direito Público Comparado - Master Recherche 2, pela Universidade Panthéon - Sobornne- Paris
11:15 – 12:00: Roseane Maria Garcia Lopes de Souza
Engenheira Sanitarista (1985) com especialização em Perícia e Auditoria Ambiental com o tema “Princípios e Métodos Utilizados na Elaboração de um Plano de Segurança em Sistemas de Abastecimento de Água para Consumo Humano”, pelo INPE-Instituto de Pesquisas Energéticas e Nucleares (2005). Especialização em Engenharia Ambiental pela USP (1986)
12:00 – 13:30: Almoço

Painel 2: Experiências Internacionais
13:30 – 14:30: Petia Mijaylova Nacheva
Reúso Potável Direto e Indireto
Pesquisadora do Departamento de Tratamento de Águas Residuais no Instituto Mexicano de Tecnologia da Água e Professora do Programa de Pós-Graduação em Engenharia da Universidade Nacional Autônoma do México (Engenharia Ambiental). Possui Bacharelado em Engenharia Civil pela Universidade de Sofia (Bulgária) e Ph.D. em Engenharia Ambiental pela Universidade de Moscou (Rússia). É membro da Academia Mexicana de Ciências, Academia de Engenharia do México, Associação Nacional de Pesquisa e Associação Mexicana de Engenharia, Ciência e Gestão Ambiental.
14:30 – 15:30: Michael Robert Markus
Reabastecimento de Águas Subterrâneas - Experiência de Orange County Water District
Gerente Geral de Água no Distrito de Orange County. 35 anos de experiência em implantação de grandes projetos e gestão de recursos hídricos. Responsável pela execução do maior

programa do mundo de reuso potável indireto.
15:30 – 16:00: Coffee-break
16:00 – 17:00: Josef Lahnsteiner
Reúso potável em Windhoek - Namíbia
Mestre e PhD em Biotecnologia pela Universidade de Recursos Naturais e Ciências da Vida em Viena. 30 anos de experiência em projetos de água e esgotos. É Diretor de Tecnologia, Pesquisa e Desenvolvimento da VA TECH WABAG. É membro da Windhoek / Goreangab Comitê de Pesquisa Potável e membro do Conselho de Windhoek / Ujams, empresa de recuperação de águas residuais industriais.
17:00 – 18:00: Ellen McDonald
Status do Reúso Potável direto - Iniciativas no Texas
Lidera o grupo de recursos hídricos na Alan Plummer Associates. Engenheira Civil pela Universidade Bucknell, Mestre e PhD. em Engenharia de Recursos Hídricos pela Universidade de Stanford. 25 anos de experiência nas áreas de planejamento de recursos hídricos, reuso de água, modelagem de qualidade da água, modelagem e planejamento nos sistemas de água e esgoto.

Quinta-feira - 16 de Outubro
08:00 – 09:00: George Tchobanoglous
Reúso Potável Direto
Professor Emérito do Departamento de Engenharia Civil e Ambiental da Universidade da Califórnia, em Davis. Autor ou co-autor de mais de 500 publicações técnicas, incluindo 22 livros didáticos e oito obras de referência. Já ministrou mais de 600 apresentações técnicas nos EUA e no exterior. Ex-presidente da Associação de Engenheiros Ambientais e Professores de Ciências. Eng. Civil pela Universidade do Pacífico, Mestre em Engenharia Sanitária pela Universidade da Califórnia, em Berkeley, e um PhD em engenharia ambiental pela Universidade de Stanford.
09:00 – 10:00: Michael Robert Markus
O Papel do monitoramento da qualidade da água de reuso na proteção da saúde pública
10:00 – 10:30: Coffee-break
10:30 – 11:30: Ian Leonard Pepper
Monitoramento de Confiabilidade e Controle do Processo de Reúso Potável
Diretor e Professor da Universidade do Arizona, “National Science Foundation Water & Environmental Technology Center (WET) ”, e co-diretor do novo Centro de Tecnologia de Água e Energia Sustentável conhecida como “WEST”. É Microbiologista Ambiental, membro da Associação Americana para o Avanço da Ciência, da Academia Americana de Microbiologia, da Sociedade de Ciência do Solo da América, e da Sociedade Americana de Agronomia. É autor e coautor de oito livros didáticos, 40 capítulos de livros, e mais de 160 artigos em revistas científicas.
11:30 – 12:30: James Crook
Marcos Regulatórios para Reúso Potável na Califórnia e Recarga de Aquíferos
Consultor de Engenharia Ambiental com mais de 40 anos de experiência nos setores público e privado nos EUA. Atua no “American Water Works Association”, “International Water Association” e nos comitês de reúso de água ‘’Water Environment Federation”. É Engenheiro Civil pela Universidade de Massachusetts com mestrado e PhD em Engenharia Ambiental pela Universidade de Cincinnati.

12:30 – 14:00: Almoço

Painel 3 - Debate: Aspectos Técnico-Operacionais e Legais para Implantação do Reúso para Potabilização
14:00 – 17:00
Prof. Dr. Ivanildo Hespanhol
Prof. Escola Politécnica da USP / Diretor do CIRRA
Prof. Dr. Pedro Mancuso
Prof. Faculdade de Saúde Pública USP / CEAP
Dr. Otávio Okano
Diretor Presidente da CETESB
Dr. Daniel Fink
Procurador de Justiça do Ministério Público do Estado de São Paulo

Programação Internacional

Petia Mijaylova Nacheva: She is Researcher of the Department of Wastewater Treatment in the Mexican Institute of Water Technology and Professor in the Postgraduate Program in Engineering of the Mexican National Autonomous University (Environmental Engineering). She received a B.S. in Civil Engineering from the University of Sofia (Bulgaria) and Ph.D. in Engineering Sciences (Environmental Engineering) from the University of Moscow (Russia). Her research interests are in the areas of wastewater treatment, reuse and recycling, biological and advanced treatment systems, nutrient removal, small wastewater treatment systems for decentralized water management, water reclamation and technology for removal of emerging contaminants. She has authored over 160 technical publications on wastewater treatment and reuse. She is a member of Mexican Academy of Science, Engineering Academy of Mexico, National Research Association and Mexican Association of Engineering, Science and Environmental Management.

Presentation Abstract: Direct and Indirect Potable Reuse: The utilization of alternative water sources like reclaimed municipal wastewater is one of the most promising options for a sustainable integrated water management. Among the various beneficial uses of reclaimed wastewater the managed Direct and Indirect Potable Reuse (DIPR) receives growing attention. The current state of the DIPR is presented in this article, advantages and implementing feasibility is highlighted. The required water quality is discussed. There is a need of research on the long time health effects of emerging pathogens and trace organic constituents. Regulatory requirements for DIPR are established only in some countries; therefore regulation development is needed. Reclamation technology, options and examples of existing systems are provided. Today, technically proven water reclamation processes can provide water of almost any desired quality. Natural environmental barrier and multiple barriers in the purification process are

considered for DIPR. Identification of treatment alternatives and a comparison of the potential health risks are essential steps for DIPR implementing. Research is required to develop novel treatment systems able to ensure the removal of micro-contaminants of health concern.

Michael Robert Markus: General manager of the Orange County Water District. With more than 35 years of experience, Mike is well known for his expertise in large project implementation and water resource management.

During his 26-year career at the District, Mike was responsible for managing the implementation of the $480 million Groundwater Replenishment System program. This project is the largest planned indirect potable reuse project in the world and has won many awards including the 2008 Stockholm Industry Water Award, 2009 ASCE Outstanding Civil Engineering Achievement Award, 2014 U.S. Water Prize and 2014 Lee Kuan Yew Prize.

Presentation Abstract 1: Groundwater Replenishment: Orange County Water District's Experience

The Groundwater Replenishment System (GWRS) is the largest planned indirect potable reuse project in the world. It currently produces 265,000 cubic meters per day (m3/d) of highly purified recycled water that is used for groundwater recharge and also for direct injection into coastal wells, which form a barrier to protect the groundwater basin from seawater intrusion. The GWRS takes clarified secondary effluent and uses advanced treatment consisting of microfiltration (MF), reverse osmosis (RO) and ultraviolet light/advanced oxidation (UV/AOP) to produce water that is of near distilled water quality. This new source of water is drought-proof and provides enough water for nearly 600,000 people while also lessening the amount of imported water supplies.

The project has been so successful that the District is currently expanding the facility and will be producing an additional 113,500 m3/d in February 2015.

Presentation Abstract 2: The Role of Monitoring in Public Health Protection

Water quality monitoring has played key role in the Orange County Water District's (OCWD) operation of potable reuse facilities, beginning with the Water Factory 21 (WF-21) project in the 1970s and continuing today with the Groundwater Replenishment System (GWRS). These monitoring programs are analogous to those applied to conventional drinking water sources, but take into account the unique features of potable reuse to protect against acute microbial, acute chemical, and chronic chemical risks. Monitoring begins with source control programs in the sewershed and continues throughout the multi-barrier treatment process. While traditional laboratory testing remains at the core of OCWD's GWRS water quality monitoring program, the use of online real-time monitoring to verify the treatment effectiveness has increased greatly since the days of WF-21. The need for online sensors to reliably detect real-time treatment process failure will only grow with the increasing interest in direct potable reuse projects lacking environmental buffers or significant retention time prior to distribution.

Josef Lahnsteiner: MSc and PhD in Biotechnology from the Vienna University of Natural Resources and Applied Life Sciences. Since nearly thirty years, he has been involved in a wide range of water and wastewater projects. Currently, He is the Director of Technology, Research & Development of VA TECH WABAG.

He is a member of the Windhoek / Goreangab Potable Research Committee and Board Member of de Windhoek / Ujams Industrial Wastewater Reclamation Company.

He is also a member of the IWA Water Reuse Specialist Group's Management Committee and he is an expert in the fields of industrial, urban and potable water reclamation.

Presentation Abstract: Potable Reuse in Windhoek - Namibia

Namibia is the most arid country on Southern Africa and more than 80 % of this area consists of desert or semi-desert. The annual rainfall in Windhoek is approximately 370 mm. The potential surface evaporation rate is in the range of 3,000 mm/a. The nearest river, the Okavango, is aprox. 700 Km from Windhoek. Therefore, the city is water stressed and several severe droughts have made direct potable reuse vital for its development. The Windhoek experience shows that treated domestic sewage can be successfully used for potable reclamation. The multiple barrier approach employed guarantees reclaimed water of a quality that constantly meets all the required drinking water standards. Aproximately 30 % of the potable water supply consists of reclaimed water. Therefore, this source is an essential part of the integrated water resource management and has contributed greatly to the social and economic development of

the city.

Ellen Thomas McDonald: She is a principal at Alan Plummer Associates where she leads the water resources group. She holds a Bachelor of Science degree in Civil Engineering from Bucknell University and a Master of Science and Ph.D. in Water Resources Engineering from Stanford University. Ellen has more than 25 years of experience in the areas of water resources planning, water reuse, water quality modeling and water and wastewater system modeling and planning. Through her work at Alan Plummer Associates, Ellen has assisted a number of cities and water districts in the planning, development and implementation of water reuse projects, relating to both direct and indirect reuse. Ellen is a frequent presenter on water reuse issues and currently serves as president of the Texas section of the WateReuse Association.

Presentation Abstract: Status of Direct Potable Reuse - Initiatives in Texas

With a population expected to double within the next 50 years and a commitment to supporting its growing economy, water supply has become a priority issue in the state of Texas. Water utilities in Texas have been leaders in the implementation of water reuse projects as part of the state's water supply portfolio. Planned projects implementing indirect potable water reuse have been in place since the 1980's. More recently, due to extended dry periods and lack of other economical water supply options in the western portion of the state, direct potable reuse has been implemented or is being planned at several utilities. This presentation will provide a brief background on water supply issues in Texas and discuss the evolution of potable reuse implementation in the state. Case study examples of several direct potable reuse projects will be provided.

George Tchobanoglous: Professor Emeritus in the Department of Civil and Environmental Engineering at the University of California. His research interests are in the areas of wastewater treatment, water reuse, small and decentralized systems, and solid waste management. He has authored or co-authored over 500 technical publications including 22 textbooks and 8 reference works. He has given more than 600 technical presentations, both in the United States and abroad. He is a Past President of the Association of Environmental Engineers and Science Professors. Among his many honors, in 2003 he received the Clarke Prize from the National Water Research Institute. In 2004, he was also inducted into the National Academy of Engineering. In 2005, he was awarded an honorary Doctor of Engineering from the Colorado School of Mines. In 2007, he received the Frederick George Pohland Medal. In 2013 he was the AAEE and AEESP Kappe Lecturer. His degrees include a B.S. degree in civil engineering from the University of the Pacific, an M.S. degree in sanitary engineering from the University of California at Berkeley, and a Ph.D. in environmental engineering from Stanford University.

Presentation Abstract: Direct Potable Reuse - A Progress Report

Population growth; urbanization, especially along coastal regions; and climate change are resulting in stressed public water supplies and development of new water supplies for metropolitan areas is becoming increasingly difficult, if not impossible. As a consequence, existing water supplies must go further. One approach for achieving this objective is by increased water reuse, particularly in supplementing municipal water supplies. Although non-potable water reuse offers many opportunities, the quantities of water recycled are limited or seasonal and the cost per unit volume used associated with the separate piping and storage systems for reclaimed water is prohibitive. The solution to the problems of limited and seasonal demand and distribution and storage costs is to implement direct potable reuse (DPR) of purified water, in which purified municipal wastewater water directly into municipal water supply systems. The issues associated with DPR, the progress towards implementation, and the outlook for the future are explored.

Ian Leonard Pepper: Professor at the University of Arizona, Director of the University of Arizona, National Science Foundation Water & Environmental Technology Center (WET), and Co-Director of the new Water and Energy Sustainable Technology Center known as WEST. He is an environmental microbiologist whose research has focused on the fate and transport of pathogens in air, water, soils and wastes. More recently he has developed the University of Arizona, Real-Time Sensor Laboratory. His expertise has been recognized by membership on six National Academy of Science Committees. He is a Fellow of the American Association for the Advancement of Science, the American Academy of Microbiology, the Soil Science Society of America, and the American Society of Agronomy.

He is also a Board Certified Environmental Scientist within the American Academy of Environmental Engineers and Scientists. He is the author or co-author of eight textbooks; 40 book chapters; and over 160 peer-review journal articles.

Presentation Abstract: Monitoring for Reliability and Process Control of Potable Reuse Applications

Potable reuse can be either indirect or direct, but for any potable reuse application, it is imperative that the reclaimed water is subjected to advanced treatment to remove both

traditional and emerging chemical and microbial contaminants. It is also imperative that any advanced treatment failure be detected in real-time, to prevent contamination of potable water supplies. Therefore we have evaluated the ability of on-line sensors, to detect chemical or microbial contaminants in water destined to become a potable water source. Our vision was to advance smart water reuse systems that are self-monitoring and self-healing, thereby gaining public trust through demonstrated reliability and security. The University of Arizona Real-Time Sensor Laboratory has already been built and will be housed in the new Water and Energy Sustainable Technology (WEST) Center.

This dedicated facility for on-line monitoring and process control is one of the most advanced laboratories of its kind worldwide, with an established track record of real-time detection and destruction of contaminants. Advanced treatment technologies for reclaimed water include: UV ± H2O2; ozone ± H2O2; reverse osmosis; microfiltration; and granular activated carbon. Real-time sensors in the lab include on-line sensors for general water quality parameters as well as organic and microbial contaminants.

James Crook: Environmental engineering consultant with more than 40 years of experience in state government and consulting engineering arenas serving public and private sectors in the United States and abroad. He is an internationally-recognized expert in the area of water reclamation and reuse and has been involved in numerous projects and research activities involving public health, regulatory and permitting issues, risk assessment, and treatment technology. He currently serves on the American Water Works Association, International Water Association, and Water Environment Federation Water Reuse Committees. He is Civil Engineering from the University of Massachusetts and an M.S. and Ph.D. in Environmental Engineering from the University of Cincinnati. He is a Registered Professional Engineer in California and Florida.

Presentation Abstract: California Regulatory Setting for Potable Reuse and Reservoir Augmentation

California has had indirect potable reuse projects via groundwater recharge since 1962. There are seven operating projects in the state and several more proposed. In addition, there is increasing interest in direct potable reuse, and the California Department of Public Health (CDPH) recently initiated an independent advisory panel to assist them in the development of needed criteria. This presentation will address the status, regulatory controls, and issues associated with indirect potable reuse via groundwater recharge (for injection and surface spreading) and surface water augmentation as well as a possible regulatory scheme for direct potable reuse. The treatment process, water quality, monitoring, response retention time, and

other requirements in the CDPH groundwater recharge regulations will be discussed. The relationship between the potable reuse regulations and the California Safe Drinking Water Act also will be presented.

I Fórum Técnico Internacional "Reúso Direto e Indireto de Efluentes para Potabilização"

Local: Faculdade de Saúde Pública da USP

Endereço: Av. Dr. Arnaldo, 715 – Consolação – São Paulo - SP

Data: 15 e 16 de outubro de 2014

Horário: 8 às 18 horas

Way Comunicações