



65th Anniversary
INTERNATIONAL
WATER
CONFERENCE[®]

PROGRAM GUIDE

October 17-21, 2004
Omni William Penn Hotel
Pittsburgh, Pennsylvania

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A Message From the Conference Chair



James Datesh
Dacar Industries, Inc.
General Chair, IWC 2004

Welcome to the 65th Anniversary International Water Conference®.

Before anything, review this year's program carefully, selecting the sessions that interest you most. I promise you will find many, and because there are lots of concurrent sessions and activities, you will have to make some tough choices.

There are some big changes this year at the IWC. One you can't miss is that for the first time the exhibit hall is now on the same floor as the technical sessions. By consolidating the two, you will more easily experience the benefits of both. Additionally, all of us will cross paths more often and have more opportunity to interact, a most important part of being here.

This year's Keynote Speaker, Peter J. Censky of the Water Quality Association will address another type of consolidation – the type that has so reshaped the industries involved with using, treating and managing water. His presentation promises to be provocative, with something for every attendee to consider. Don't miss him. He is part of the Plenary Session on Monday beginning at 10:45 AM.

On Tuesday you have the special opportunity to travel off site to see "the best all-time work of American architecture," Frank Lloyd Wright's Fallingwater, a 1935 masterpiece in a fabulous sylvan setting. Fallingwater has two connections with water. First, it was built such that a waterfall passes through the house itself. The second is that its new wastewater facility is a great example of cutting edge applications.

One more thing — this year's Technical Program Chair, Alan Smith, and his committee have done a superb job. May I ask that you seek out Alan and extend your appreciation for all of their efforts. And if you are ready to become part of the IWC planning and implementation process, come see Alan or me.

James R. Datesh
General Chair, 2004

Sunday, October 17

5:00 - 8:00pm — Exhibit Hall Open in the Grand Ballroom — Kick Off Party

Monday, October 18

2004 AGENDA AT A GLANCE

Allegheny Room
(17th Floor)

Urban Room
(17th Floor)

Monongahela Room
(17th Floor)

Morning Sessions:
8:30am - 10:30am

Legionella – An Update on Risk
Assessment, Control Technologies
and Remediation of Infected Water
Systems — Part I

Wastewater Solutions —
Innovative Treatments for
Unique Problems

10:45am-Noon — Keynote/Plenary Session in the Urban Room

Noon - 2:00pm — Break for Lunch — Exhibit Hall Open in the Grand Ballroom

Afternoon Sessions:
2:00pm - 5:00pm

Sustainable Development

Legionella – An Update on Risk
Assessment, Control Technologies
and Remediation of Infected Water
Systems — Part II

Current Pretreatment
Technologies for the
Improvement of Industrial
Water Processes

4:30pm - 7:00pm — Exhibit Hall Open in the Grand Ballroom

Tuesday, October 19

2004 AGENDA AT A GLANCE

Allegheny Room
(17th Floor)

Urban Room
(17th Floor)

Monongahela Room
(17th Floor)

Morning Sessions:
8:00am - Noon

Wastewater Reclamation and
Reuse with Membrane Bioreactors

Innovations in Cooling Water
Treatment

Current Ideas for Water
Chemistry Control
and Operation of HRSG's
with Panel Discussion

11:00am - 6:00pm — Tour of Fallingwater

Noon - 2:00pm — Attendees Lunch in the Exhibit Hall

Afternoon Sessions:
2:00pm - 5:00pm

Membrane Systems for Use in
Boiler Plants and for Potable
Water Production

Cooling Water, NPDES Concerns —
Current/Future Perspectives from
Regulators (US EPA) and Industry

Pros and Cons of Amine Use
in Industrial and Utility Power
Plants with Panel Discussion

Wednesday, October 20

2004 AGENDA AT A GLANCE

Allegheny Room
(17th Floor)

Urban Room
(17th Floor)

Monongahela Room
(17th Floor)

Morning Sessions:
8:00am - Noon

EDI: Innovative Approaches
and Practical Applications

Challenges in Treating
Monitoring, & Conditioning
Boiler Feedwater for
Power Plants

Noon - Conference Adjourns

CONTINUING EDUCATION WORKSHOPS Wednesday, October 20

WORKSHOP AGENDA AT A GLANCE

Vandergrift Room
(Conference Level)

Heinz Room
(Conference Level)

Afternoon Sessions:
1:00pm - 5:00pm

Water Systems and Legionnaires'
Disease Workshop

Chemical Precipitation Softening
Part I

CONTINUING EDUCATION WORKSHOPS

Thursday, October 21

WORKSHOP AGENDA AT A GLANCE

Vandergrift Room
(Conference Level)

Heinz Room
(Conference Level)

Morning Sessions:
8:00am - Noon

Water Systems and Legionnaires'
Disease Workshop

Chemical Precipitation Softening
Part II

Executive Committee

James R. Datesh *General Chair*
Dacar Industries, Inc.

Wayne Bernahl *Marketing*
W. Bernahl Enterprises Ltd.

Andrew Calderwood *Ad Hoc*
Consultant *Internal Communications*

Malcolm Clemens *Nominations*
Consultant

Edward Geishecker
Consultant

Michael Gottlieb
ResinTech

Joseph Loftis *Opening/Keynote*
Consultant

Edward Maziarz
Alcoa

David McFayden, P.Eng. *Long Range*
Michael Baker Jr., Inc. *Conference Planning*

Fred Potthoff
Kroff Chemical Company

John Schubert *Budget*
EnCOSS

Hermann Sicius *Continuing Education Workshop*
Lanxess Corporation

David Simon *Special Outreach*
Cyrus Rice Water Consultants

Kumar Sinha *Continuing Education Workshop*
Bechtel Power Corporation

Alan Smith *Vice Chair, Technical Program*
Consultant

Bradley D. Wolf
Veolia Water North America

Advisory Council

AMBI-Design, Inc.
Shan Sundaram

Anderson Water Systems
Peter Midgley

Aquatech International
Corporation
Devesh Sharma

Arthur Freedman &
Associates, Inc.
Robert J. Cunningham, P.E.

Ashland Specialty
Chemical Company
Mike Dalton

Bechtel Power
Corporation
Mark Janick

Black & Veatch
Bruce Larkin

Buckman Laboratories, Inc.
Len Olavessen

ChemTreat, Inc.
David Beck

Dow Chemical Company
Dan Rice

Eco-Tec Inc.
Craig J. Brown

Epicor Incorporated
Richard Hetherington

Fort Bend Services, Inc.
James Dromgoole

Graver Water Systems, Inc.
Robert Applegate

Ionex Water Treatment, Inc.
Vijay Puri

Ionics/Ecolochem, Inc.
Robert Taylor

Mechanical Equipment
Company
Bob Bradley

Mitco, Inc.
Martin Orban

Nalco Company
Kelle Zeiher

Puckorius & Associates, Inc.
Paul Puckorius

ResinTech
Michael Gottlieb

Rohm and Haas
Company
Edward Nace

Sentry Equipment
Corporation
Myron Feldman

Severn Trent Services
(Capital Controls Co.)
Greg Kriebel

Sheppard T. Powell
Associates
David Cline, Jr.

Sybron Chemicals, Inc.
Dwight Tamaki

Zinkan Enterprises, Inc.
Louis Koenig

Attendee Information

PITTSBURGH ATTRACTIONS

Pittsburgh is a dynamic city with a strong industrial heritage. It features beautiful parks, rivers, and more golf courses per capita than any city in the United States. Visitors can enjoy an interactive science center, world-class museums, and riverboat cruises along the city's three rivers.

Pittsburgh's compact Golden Triangle puts you within easy walking distance of more than a dozen historical and cultural attractions, architectural landmarks, professional sports, great shopping and restaurants to delight every taste. When it comes to dining, the choices range from casual family-style restaurants to a forgotten train station that has been transformed into a stunning restaurant, shopping, and entertainment complex. A quick incline ride to scenic Mt. Washington not only provides you with a wide range of choices for both casual and elegant dining but delivers a spectacular view of the city. There's also our river-front boardwalk featuring nautical-theme restaurants and night-life.

For detailed information on restaurants, museums, shopping and other things to do and see in Pittsburgh, please visit our **Information Table** on the 17th Floor near the Registration Desk.

FUN RUN

Runners, don't forget to pack your running gear, so you can run around the rivers. ResinTech will host the annual Fun Run.

Time: Tuesday morning, October 19 at 7:00 am

Place: Omni William Penn Hotel, William Penn Place Entrance (across from the park)

Distance: Approximately 3.0 miles — Whether you're walking or running, it's sure to be a fun-filled workout.

REGISTRATION DESK

The Registration Desk Hours of Operation are:

Sunday 5:00 pm to 8:00 pm

Monday 7:30 am to 5:00 pm

Tuesday 7:30 am to 5:00 pm

Wednesday 7:30 am to 12:00 pm

NAME BADGE IDENTIFICATION

Please wear your badge on your right side at all times. Your badge is your passport to Technical Sessions, the Exhibit Hall, and International Water Conference® social functions. In addition, important local phone numbers have been printed on the back of your badge for your use.

Attendee Information

PREPARED DISCUSSIONS

Each Technical Paper presentation is followed by a Prepared Discussion, giving you a thoroughly considered, different perspective. Also, all presentations are followed by an open floor discussion where audience members and presenters can fully interact. The results: you can make better, more informed decisions.

MESSAGE BOARD

As a service to conference registrants, a Message Board will be located at the Registration Desk on the 17th floor. The board will be maintained by the registration staff from 8:00 a.m. Monday through noon on Wednesday. The messages will be retained until the end of each day.

REGISTRATION LISTS

Registrations received prior to **Monday, October 11** have been compiled in THE IWC REGISTRATION LIST. This popular service provides attendees with additional networking opportunities.

An Addendum will be available the morning of **Wednesday, October 20**. It will contain those attendees that registered after October 11 and on-site during the Conference.

An Electronic version of the full Registration List will be available at the Registration Desk the morning of Wednesday, October 20. It provides the names of all registered attendees in both Excel and comma-delimited text formats. There is a \$25 administrative charge.

PRE-PRINT LOCATION

Pre-prints for all technical presentations are available at the Pre-Print Room located in the 17th Floor Foyer. Pre-prints can be purchased for just \$2.00 per copy. Also, you can find copies of previous years' IWC Proceedings (for \$55 per volume). The Pre-Print Room will be open Monday and Tuesday from 8:00 am to 5:00 pm, and Wednesday 8:00 am to 12:30 pm.

AMERICANS WITH DISABILITIES ACT

The International Water Conference® and ESWP support the Americans with Disabilities Act (ADA), which prohibits discrimination against, and promotes public accessibility for those with disabilities. We ask those requiring specific equipment or services as an attendee to contact the IWC staff at the Registration Desk and advise us of any such requirements.

Attendee Information

HOTEL INFORMATION

Omni William Penn Hotel (412) 281-7100

Ramada Plaza Suites (412) 281-5800

MAP OF DOWNTOWN PITTSBURGH



- ① Omni William Penn Hotel
- ② Ramada Plaza Suites
- ③ Westin Convention Center
- ④ Engineers' Society of Western Pennsylvania
- P Parking Garage
- T Subway Station

2004 IWC Awards

ANNUAL MERIT AWARD

Each year, the International Water Conference® presents the Annual Merit Award to honor outstanding individuals in the field of industrial water technology. This year's Merit Awardee is **Malcolm Clemens**.

PAUL COHEN AWARD

As a memorial to Paul Cohen and his contributions to the power generation industry, the IWC is proud to recognize the authors of the most precise and innovative presentation in the field of power systems water technology that was presented at the 64th Annual Water Conference®. This year we honor **Mike Rootham**, Mike Rootham & Associates, as the author of the paper IWC-03-12, *"Amine Use in Steam Water Cycles and Boilers — The State of Our Knowledge"*.

JOSEPH A. LEVENDUSKY MEMORIAL SCHOLARSHIP

Epicor, Incorporated, in cooperation with the International Water Conference®, is pleased to present the Joseph A. Levendusky Scholarship to Ms. **Natalie H. Gillman**. Ms. Gillman resides in Auburn, Michigan, and is a sophomore at the University of Michigan, majoring in Chemical Engineering.

Natalie, like many other scholarship recipients, was employed by the Dow Chemical Company in their student co-op laboratory program. She received high praise for 1) project dedication, 2) efficient data generation and processing, and 3) customer responsiveness. Her work at the Dow laboratory offered Natalie knowledge and responsibility that most sophomore students do not possess.

Natalie was also accepted to the Undergraduate Research Opportunity Program (UROP) at the University of Michigan for the 2004-2005 academic year. This program involves researching a special project through design and engineering efforts. Natalie believes that engineering is about invention and design and, she hopes to make a "significant difference."

We congratulate Ms. Natalie H. Gillman and wish her good luck on future endeavors! We also appreciate the assistance provided by the International Water Conference® in selecting our scholarship recipient and extend our thanks to the Committee.

Technical Program

MONDAY, OCTOBER 18

Core Technical Tracks

You will notice next to each session there is a corresponding symbol. Attendees will find this key useful in attending sessions specific to their needs.



PROCESS WATER
PREPARATION



COOLING &
PROCESS WATER



STEAM
GENERATION



WASTEWATER
& RECYCLE

7:30AM

Registration desk opens



LEGIONELLA — AN UPDATE ON RISK ASSESSMENT, CONTROL TECHNOLOGIES AND REMEDIATION OF INFECTED WATER SYSTEMS, PART I

8:30AM – 10:30AM

LOCATION

URBAN ROOM

Session Chair: Wayne Micheletti,
Wayne C. Micheletti, Inc., Charlottesville, VA

IWC Representative: Alan Smith,
Consultant, Pittsburgh, PA

Discussion Leader: Janet Stout, PhD.,
Pittsburgh VA Healthcare System, Pittsburgh, PA

IWC-04-01

Paper

8:30AM

Risk Assessment: The Essential First Step in Legionellosis Risk Reduction

Andrew Cooper, Howard Barnes, Noel Christopher, Thomas Lindley, Eric Myers, *Nalco*

Technical Program

MONDAY, OCTOBER 18

Company Water and Core Technologies and Environmental Hygiene Services, Naperville, IL

A risk management plan for waterborne pathogens should be implemented for all water systems. Risk assessment is the first step in developing this plan. This paper describes a practical approach to legionellosis risk assessment, including assessment factors, benchmarking, communication, and prioritization strategies that guide ongoing risk reduction actions.

8:55AM

Prepared Discussion:

Arthur Freedman, Ph.D., *Arthur Freedman Associates, Inc., East Stroudsburg, PA*

9:05AM

Closure & Floor Discussion

IWC-04-02

Paper

9:20AM

Cooling Tower Water Systems and Legionnaires' Disease: Lessons Learned from Recent USA Incidents and Outbreaks and the Corrective Actions That Should Be Taken

Paul Puckorius, *Puckorius & Associates, Inc., Evergreen, CO*

Cooling water systems have been the source of Legionella bacteria proliferation since the 1976 outbreak. But why? Case histories are identified as to what happened, what was the action plan, and what can be done to minimize this in the future. The case histories include HVAC, industrial, and utility evaporative cooling water systems. The industries represented are hospitals, chemical plants, power plants, petroleum refineries, and plastics molding facilities. The incorporation of new technologies in control and testing has greatly improved. Guidelines are provided to be considered by both end users and suppliers of water treatment services.

9:45AM

Prepared Discussion:

Christopher Nalepa, Ph.D., *Albemarle Corp, Baton Rouge, LA*

9:55AM

Closure & Floor Discussion

10:15-10:30

COFFEE BREAK IN URBAN ROOM

Technical Program

MONDAY, OCTOBER 18



WASTEWATER SOLUTIONS
INNOVATIVE TREATMENTS
FOR UNIQUE PROBLEMS

8:30 AM – 10:30 AM

LOCATION

MONONGAHELA ROOM

Session Chair: Devesh Sharma,
*Aquatech International Corp.,
Canonsburg, PA*

IWC Representative: John Schubert,
EnCOSS, Monroeville, PA

Discussion Leader: Mark Janick,
Bechtel Power Corporation, Frederick, MD

IWC-04-04

Paper

8:30AM

**Mobile Wastewater Treatment Helps
Remediate Highly Concentrated
Acidic Pond Water at Piney Point
Fertilizer Plant, Florida**

Bill Perpich Jr., *USFilter, Tampa, FL*; Chris Soule, *USFilter, Schaumburg, IL*; Sam Zamani, *Florida Department of Environmental Protection, Phosphate Management, Tampa, FL*; Louis Timchak, *Lutz, FL*; Gary Uebelhoer, *Environmental Consulting & Technology, Tampa, FL*; LnsP Nagghappan, Robert Helwick, *Veolia Water Systems, Pittsburgh, PA*

This case study explains the wastewater problem that occurred at the Piney Point fertilizer plant in Palmetto, Florida, as well as solutions to the problem, including mobile reverse osmosis treatment. Also discussed are the challenges encountered during wastewater treatment system startup, and treatment results, including raw water and treated water data.

8:55AM

Prepared Discussion:
Colleen M. Kulick, *Parsons E & C, Reading, PA*

9:05AM

Closure & Floor Discussion

Technical Program

MONDAY, OCTOBER 18

IWC-04-05

Paper

9:20AM

Phased Municipal Sewage/Sludge Stabilization

Godefroid Bukuru, Jian Yang, *Tongji University, Shanghai, China*

A study on a pilot plant accomplishing phased municipal sewerage/sludge stabilization was conducted at a municipal sewerage treatment plant. Stabilization is achieved in three-step process: anaerobic reactor, roughing filter and an earthworm-eco-filter. The whole system realizes the zero emission of sludge and has the characteristics of clean technology.

9:45AM

Prepared Discussion:

Lee Lundberg, *Veolia Water North America, Baden, PA*

9:55AM

Closure & Floor Discussion

10:15-10:30

COFFEE BREAK IN URBAN ROOM

Technical Program

MONDAY, OCTOBER 18

PLENARY SESSION –
KEYNOTE ADDRESS

10:45 AM – Noon

LOCATION

URBAN ROOM

General Chair: James Datesh, Dacar Industries, Inc., Pittsburgh, PA

Welcome: Carl W. Schwartz, President, Engineers' Society of Western Pennsylvania, Pittsburgh, PA

Presentation of Paul Cohen Award

Presentation of Annual Merit Award

Presentation of Levendusky Scholarship

Keynote Address

WQA on Changing Paradigms in the Water Treatment Industry

Keynote Speaker: Peter J. Censky, Water Quality Association (WQA), Lisle, IL

The water industry's segmentation is a growing weakness that causes all of us to lose opportunities. Each niche has its own conference and trade show, and this is becoming increasingly costly and time consuming for companies and professionals. There is a new paradigm emerging that will bring these niches together to create opportunities for sales and professional growth.

Technical Program

MONDAY, OCTOBER 18



CURRENT PRETREATMENT TECHNOLOGIES FOR THE IMPROVEMENT OF INDUSTRIAL WATER PROCESSES

2:00 PM – 5:00 PM

LOCATION

MONONGAHELA ROOM

Session Chair: Vijay Puri, *Ionex Water Treatment, Inc., Ingomar, PA*

IWC Representative: Wayne Bernahl, *W. Bernahl Enterprises Ltd., Elmhurst, IL*

Discussion Leader: William Willersdorf, *USFilter, Bridgewater, NJ*

IWC-04-06

Paper

2:00PM

Dissolved Air Floatation: A Proven Technology Making Inroads in Industrial Clarification

William E. Haas, *Ecolochem, Inc., Norfolk, VA*; Addriaan van der Beek, *Nijhuis Water Technology, Richmond Hill, Ontario, Canada*; Greg Bartley, *TVA, Nashville, TN*

This paper reports on a presently operating DAF unit, pilot work for a another installation and progress of the full flow installation based on the pilot work. DAF performance will be reported on varying raw water turbidity. Down stream RO performance will also be investigated.

2:25PM

Prepared Discussion:
Mark Janick, *Bechtel Power, Frederick, MD*

2:35PM

Closure & Floor Discussion

IWC-04-07

Paper

2:50PM

High Rate Compressible Medium Filtration

William D. Kunzman, *Schreiber LLC, Trussville, AL*

Filtration technology employs synthetic compressible medium for suspended solids removal down to 4 microns. Filter porosity is easily modified by digitally changing media compression setting. Fluid filtered flows both around and through media. Media cleaning employs air agitation and unfiltered influent as backwash. Apparatus footprint is 20% of granular media technology.

3:15PM

Prepared Discussion:
Mike Preston, *Black & Veatch, Overland Park, KS*

3:25PM

Closure & Floor Discussion

Technical Program

MONDAY, OCTOBER 18

CURRENT PRETREATMENT TECHNOLOGIES FOR THE IMPROVEMENT OF INDUSTRIAL WATER PROCESSES

3:40-3:50PM COFFEE BREAK

IWC-04-08 Paper

3:50PM Hollow Fiber UF Pilot Testing Procedures & Case Studies

Dave Christophersen, *CROWN Solutions, Inc., Vandalia, OH*

A pilot UF system was built for testing of hollow fiber UF membrane technology for industrial applications. Uses include determining effectiveness of the technology, chemistry requirements of the UF feedwater, reliable flux rates, backwash frequencies, chemically enhanced backwash strategies (CEB), and develop system design for full-scale operation. Case studies will be presented.

4:15PM Prepared Discussion:
Jerry Alexander, *USFilter, La Canada, CA*

4:25PM Closure & Floor Discussion

IWC-04-09 Paper

4:40PM The Use of Novel Packed Bed Ion Exchange Technology for the Production of High Purity Water at WE Energies' Pleasant Prairie Power Plant

Michael Sheedy, *Eco-Tec Inc., Pickering, Ontario, Canada*; Peter G. Kutzora, *We Energies, Fossil Operations, Milwaukee, WI*

This paper describes a novel triple short-bed, SAC/SBA/SAC, ion exchange installation that utilizes columns fully packed with compressed fine mesh resin to produce 0.1 micromho/cm water with less than 10 ppb SiO₂. Pretreatment to remove suspended solids is crucial to the successful operation of this packed bed ion exchange system. At this installation, Lake Michigan feed water with turbidity values as high as 100NTU is treated by a high efficiency dual media filter. Direct inline injection of inorganic (PAC) and polymer (DADMAC) coagulants is used together with a unique micro-filtration media to ensure a filtrate quality of 0.1NTU.

5:05PM Prepared Discussion:
Al (Herman) Nebrig, *Southern Company Services, Hoover, AL*

5:20PM Closure & Floor Discussion

Technical Program

MONDAY, OCTOBER 18



LEGIONELLA — AN UPDATE ON RISK ASSESSMENT, CONTROL TECHNOLOGIES AND REMEDIATION OF INFECTED WATER SYSTEMS, PART 2

2:00 PM – 5:00 PM

LOCATION

URBAN ROOM

Session Chair: Wayne Micheletti,
Wayne C. Micheletti, Inc., Charlottesville, VA

IWC Representative: Fred Potthoff,
Kroff Chemical Company, Pittsburgh, PA

Discussion Leader: Janet Stout, PhD.,
*Pittsburgh VA Healthcare System,
Pittsburgh, PA*

IWC-04-10

Paper

2:00PM

Developing a JCAHO Program and Action Manual for Legionella

Jay Farmerie, Cyrus Rice Water Consultants, Inc., Pittsburgh, PA

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requires a specific plan be established to control infectious disease, including Legionella. This control strategy must be documented in a concise Program Manual. This paper will offer suggestions for establishing an effective Program Manual to have on hand when accreditation by JCAHO is being determined.

2:25PM

Prepared Discussion:
Matthew R. Freije, HC Information Resources, Fallbrook, CA

2:35PM

Closure & Floor Discussion

IWC-04-11

Paper

2:50PM

Evaluation of Chlorine Dioxide in Potable Water Systems for Legionella Control in an Acute Care Hospital Environment

Gregory Bova, The Johns Hopkins Hospital, Baltimore, MD, Tim Keane, Legionella Risk Management, Chalfont, PA, Paul Sharpe, Water Chemical Service, Aberdeen, MD

This paper presents Johns Hopkins Hospital evaluation of chlorine dioxide, its by-products and their impact on Legionella and pathogenic bacteria, biofilm, corrosion rates, medical and laboratory filtration systems. Installation and operational challenges, EPA and MDE permit, regulatory

Technical Program

MONDAY, OCTOBER 18

LEGIONELLA — AN UPDATE ON RISK ASSESSMENT, CONTROL TECHNOLOGIES AND REMEDIATION OF INFECTED WATER SYSTEMS, PART 2

and monitoring requirements, culturing and analysis, utilizing chlorine dioxide for remediation are presented.

3:15PM

Prepared Discussion:
Mark Hodgson, *Clayton Group Services, Inc., Edison, NJ*

3:25PM

Closure & Floor Discussion

3:40-3:50PM

COFFEE BREAK

IWC-04-12

Report

3:50PM

Chlorine Dioxide for Legionella Control in a Hospital Water System: Monitoring for Disinfection By-products

Zhe Zhang, Radisav D. Vidic, Ph.D., *University of Pittsburgh - School of Engineering, Pittsburgh, PA*, Raymond Bisson, James McElroy, Steve Piescznski, Robert E. Hawks, Carole McCann, *CHS Mercy Hospital, Buffalo, NY*, Janet Stout, Ph.D., *VA Pittsburgh Healthcare System, Pittsburgh, PA*

In an ongoing prospective study, the efficacy of ClO_2 to control Legionella in a hospital water system was evaluated and the level of disinfection by products — ClO_2^- — and ClO_3^- — were measured. Chlorite concentrations have not exceeded the EPA MCL of 1.0 mg/L. Legionella positivity at hot water outlets decreased from 60% to 35%.

4:10PM

Floor Discussion

IWC-04-13

Report

4:20PM

Legionnaires' Disease: Where are we After 27 Years of Study?

Brian G. Shelton, MPH, *PathCon Laboratories, Norcross, GA*

Legionella is among the most studied microorganism in science, yet, in spite of this, it is the leading Indoor Air Quality killer in the United States. This begs the question — How does this microorganism consistently elude prevention? Given the severity of this disease and past legal outcomes, this industry needs to be knowledgeable of this disease-causing organism.

4:40PM

Floor Discussion

Technical Program

MONDAY, OCTOBER 18



SUSTAINABLE
DEVELOPMENT

2:00 PM – 5:00 PM

LOCATION

ALLEGHENY ROOM

Session Chair: James Dromgoole,
Fort Bend Services, Inc., Stafford, TX

IWC Representative: Hermann Sicius,
Lanxess Corporation, Pittsburgh, PA

Discussion Leader: Lou Koenig,
Zinkan Enterprises, Inc., Twinsburg, OH

IWC-04-52

Report

2:00PM

**Effective Dust Suppression on a
Matured Fine Ash Dam Utilizing
Excess Mine Water**

Joey Swart, *Water & Environmental Technol-
ogy, Sasol Technology R&D, Sasol, South
Africa*

Steam production and gasification of coal result in the generation of large quantities of fine ash. Fine ash reports to a fine ash dam which under certain conditions can cause dust problems. Dust suppression was investigated using excess mine water. Indications are that dust suppression as well as salt retention was achieved. A hydrodynamic model will be discussed as a management tool for this process.

2:20PM

Floor Discussion

IWC-04-15

Paper

2:30PM

**The Cost of Water in an Arid Climate:
Water Conservation and Reuse —
Source Segregation and Treatment**

Justin R. Moses, P.E., Scott A. Greico, PE,
O'Brien & Gere Engineers, Inc., Syracuse, NY

A multifaceted approach to process water treatment and source segregation of waste-water for focused treatment and reuse at a green-field manufacturing facility in northern Mexico. A key design parameter was the balance of recycle cost against the influent well water costs, while considering the recycle water quality needed for production.

2:55PM

Prepared Discussion:
to be determined

3:05PM

Closure & Floor Discussion

Technical Program

MONDAY, OCTOBER 18

SUSTAINABLE DEVELOPMENT

IWC-04-16

Report

3:20PM

Water Reuse Experience in Petroleum Refineries Cooling Tower Water Systems — Lessons Learned

Paul Puckorius, *Puckorius & Associates, Inc., Evergreen, CO*

Water reuse for petroleum refinery cooling systems can be very successful but requires a good knowledge of the cooling system, water quality, and correct water treatment. This paper discusses the concerns that need to be addressed, the corrective actions necessary to protect the cooling system, along with case histories. Specific water qualities are described, along with the possible impact of various water constituents on a variety of cooling system materials of construction.

3:40PM

Floor Discussion

3:50-4:00PM

COFFEE BREAK

Technical Program

TUESDAY, OCTOBER 19

7:30am

Registration desk opens



INNOVATIONS
IN COOLING
WATER TREATMENT

8:00 AM – Noon

LOCATION

URBAN ROOM

Session Chair: Michael Dalton,
Ashland Specialty Chemical Company,
Katy, TX

IWC Representative: Edward Maziarz,
Alcoa, Pittsburgh, PA

Discussion Leader: Loraine Huchler, PE,
MarTech Systems, Inc., Lawrenceville, NJ

IWC-04-19

Report

8:00AM

**Demonstration of an On-site
Electrolytic Hypobromite Generator
at a Power Generation Station**

Rob Lawler, Timothy Keister, *ProChemTech International, Inc., Brockway, PA*, Jeffery Teague, *Indianapolis Power and Light Company, Indianapolis, IN*

The "ElectroBrom" electrolytic hypobromite generation process was tested as a gas chlorine replacement on cooling towers servicing 1096.5 mw of capacity at the Petersburg, IN, generating station of Indianapolis Power and Light Company. Thermal and biological data for chlorine and hypobromite operations will be presented along with operating costs.

8:20AM

Floor Discussion

IWC-04-20

Paper

8:30AM

**Zebra Mussels in an Industrial
Setting: A Portable Control Option**

Dan Butts, *Aquatic Sciences L. P., Orchard Park, NY*, John Levie, P. Eng., M.Eng., *ASI Group Ltd, St. Catharines, Ontario, Canada*

Zebra mussels have been present in North American waters for almost two decades. ASI has eradicated mussels from industrial facilities in the United States and Canada by performing on-site turnkey control programs for more than fifty facilities annually, this paper will discuss details of treatment protocols.

8:55AM

Prepared Discussion:
Raymond Post, *GEBetz, Treviso, PA*

Technical Program

TUESDAY, OCTOBER 19

9:05AM Closure & Floor Discussion

9:20-9:30AM COFFEE BREAK

IWC-04-21

Paper

9:30AM

On-Site Chlorine Dioxide: A Review of Uses, Safety, and New Processes

Marek Nowosielski, *International Dioxide, Inc., A Dupont Company, North Kingstown, RI*

Chlorine Dioxide as a biocide has been around for decades, but its wide spread usage has been limited due to early perception of complexity of the on-site chlorine dioxide generation equipment, concerns around safety of use, misconceptions around generation performance, environmental fate and analytical deficiencies. Recent advances in chlorine dioxide systems, application methods, USEPA data requirements and improved analytical tools have increased the awareness and utilization of chlorine dioxide. The objective of this paper is to review and update the various chemistries and delivery systems currently available for on-site generation of chlorine dioxide.

9:55AM

Prepared Discussion:

Leonard Olavessen, *Buckman Laboratories International, Inc., Memphis, TN*

10:05AM

Closure & Floor Discussion

IWC-04-22

Paper

10:20AM

Non-Chemical Devices: Thirty Years of Myth Busting

Timothy Keister, *ProChemTech International, Inc., Brockway, PA*

For over fifty years, Non-Chemical Devices (NCD) have been sold on testimonial success stories. This paper examines several NCD comparing stated operation theory against scientific principals, provides the actual chemistry behind some success stories, looks at continued market acceptance of NCD, and reviews seven specific NCD case history installations.

10:45AM

Prepared Discussion:

Edward S. (Ted) Beardwood, *Ashland Specialty Chemicals, Ajax, Ontario, Canada*

10:55AM

Closure & Floor Discussion

Technical Program

TUESDAY, OCTOBER 19



WASTEWATER RECLAMATION AND REUSE WITH MEMBRANE BIOREACTORS

8:00 AM – 11:00 AM

LOCATION

ALLEGHENY ROOM

Sesion Chair: Charles Blumenschein,
P.E., DEE, *Veolia Water, Moon Township, PA*

IWC Representative: Andrew
Calderwood, *Consultant, Pittsburgh, PA*

Disucussion Leader: John Schubert,
P.E., *EnCoss, Monroeville, PA*

IWC-04-23

Paper

8:00AM

Applications of Immersed Membrane Bioreactor Technology for Advanced On-site Wastewater Treatment & Water Reuse

Roland Lamoca, James Hotchkies, P.Eng.,
*ZENON Environmental Inc., Oakville,
Ontario, Canada*

Immersed Membrane Bioreactor technology is being adopted extensively worldwide, for a wide range of applications from hotels & resorts to food processing or full municipal sewage treatment. The MBR process treats highly variable and high-strength wastewater to the most advanced quality levels, maximizing the potential for reuse. With over hundreds of successful installations around the world, from <4 to >50,000 m³/d, ZENON MBR technology is setting the standard for advanced treatment and reuse. This paper will discuss a range of MBR case studies, both commercial & industrial, that illustrate the effectiveness of this technology in terms of process efficiency, space minimization & significant cost savings through safe, reliable water reuse.

8:25AM

Prepared Discussion:
John Schubert, *EnCoss, Monroeville, PA*

8:35AM

Closure & Floor Discussion

Technical Program

TUESDAY, OCTOBER 19

IWC-04-25

8:50AM

Report

Integrated Membrane Systems for Reuse Applications; Designing a Better Mousetrap

Robert Huehmer, *Metcalf & Eddy, Inc., Laurel, MD*

Implementation of existing reuse systems has not been without engineering challenges. Based upon his personal troubleshooting experience, the author presents several case studies of operating reuse systems outlining common design challenges which are often overlooked, such as calcium phosphate solubility, coagulant/antiscalant interactions, airborne biological seeding, and biological fouling issues relating to dechlorination practices.

9:10AM

Floor Discussion

9:20-9:30AM

COFFEE BREAK

IWC-04-24

9:30AM

Report

Implementing a Zero-Discharge Wastewater Reclamation and Water Reuse System at Fallingwater

Ed Fleischer, *CH2M Hill, Herndon, VA*

A new zero-discharge wastewater treatment system at Fallingwater, the site of the famous Frank Lloyd Wright house will be presented. The treatment system includes a membrane bioreactor, carbon adsorption and ultraviolet disinfection. Effluent is recycled for toilet flushwater and for irrigation of a hardwood forested site and a garden.

9:50AM

Floor Discussion

**Optional Tour of Fallingwater —
Please see the Registration Desk
for Information.**

(Pending adequate participation.)

Technical Program

TUESDAY, OCTOBER 19



CURRENT IDEAS FOR WATER CHEMISTRY CONTROL AND OPERATION OF HRSGS — PANEL DISCUSSION

8:00 AM – Noon

LOCATION

MONONGAHELA ROOM

Session Chair: Deborah Bloom, *Nalco Company, Naperville, IL*

IWC Representative: David Simon, *Cyrus Rice Water Consultants, Pittsburgh, PA*

IWC-04-26

Report

8:00AM

HRSG Chemistry Guidelines

David Daniels, *M&M Engineering, Austin, TX*

The ASME Research and Technology Committee on Water and Steam in Thermal Power Systems is finalizing their HRSG Chemistry Guidelines. They include guidelines on water and steam chemistry as well as recommendations on HRSG equipment, metallurgy, and treatment regimes. Specific considerations that set the HRSG apart from the more typical fossil-fired boiler directed the development of these guidelines. Design, operational needs and practices, and potential failure mechanisms, were all considered. These considerations will be discussed so that operators can appropriately use the ASME guidelines for their particular situation.

IWC-04-27

Report

8:20AM

Avoiding Costly Water Treatment Mistakes in Combined Cycle Power Plant Projects

Luis Carvalho, P.Eng., *GE Water & Process Technologies, Mississauga, Ontario, Canada*

This paper discusses water treatment technologies such as membrane separation (e.g. ultrafiltration and reverse osmosis), and electrodeionization (EDI), as well as the fading yet unique role that ion exchange can play in CCPP. It also addresses the critical role that qualified chemical water treatment companies can play in avoiding costly mistakes during Power plant design, how to best fit chemical treatment options, and what can go severely wrong when the raw water to the plant is not critically evaluated. The paper is based on experience obtained through many

Technical Program

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CURRENT IDEAS FOR WATER CHEMISTRY CONTROL AND OPERATION OF HRSGS — PANEL DISCUSSION

CCPP projects and offers recommendations for attaining success at the most crucial cost-saving phase of a Power plant project — the design phase.

IWC-04-28

8:40AM

Report

Heat Recovery Steam Generators- Impact of Water Chemistry

Irvin J. Cotton, *Arthur Freedman Associates, Stroudsburg, PA*, John Obermaier, *Deltak, Inc., Minneapolis, MN*

This report reviews key water chemistry requirements as well as guidelines for sampling and monitoring chemistry throughout the HRSG cycle. The importance of each parameter and challenges involved with testing, monitoring and control of various chemistry programs are reviewed. Phosphate based chemistry, all volatile and other chemical program approaches are discussed. The importance of proper start-up, shutdown and lay-up are discussed. The impact of water chemistry problems on HRSG systems is also included. Several case histories are provided illustrating consequences of improper chemistry design, monitoring and control.

IWC-04-29

9:00AM

Report

Case History of a Heat Recovery Steam Generator System Failure

Torry J. Tvedt, *T.J. Tvedt & Associates, Ltd, Angleton, TX*

Numerous tube failures in a steam generator were investigated.

It was determined that these failures were most likely to occur in regions of high heat flux and turbulence. Further analyses implicated both the choice of the internal treatment that was being used and problems with external treatment. Corrective action included modification of both internal and external treatment.

9:30-9:40AM COFFEE BREAK

IWC-04-30

Report

9:40AM

Design & Operational Concerns Associated with Chemistry in HRSGs

Douglas Dewitt-Dick, *Ashland Specialty Chemical Co., Boonton, NJ*, Edward S. Beardwood, *Ashland Specialty Chemical Co., Toronto, Ontario, Canada*

HRSG manufacturers typically recommend against chemically cleaning new units prior to operation. Experience from a reliability and water chemistry standpoint has shown that this may not be a wise alternative. This paper discusses some of the concerns associated with not chemically cleaning new units prior to operation, along with the impact on reliability associated with some design considerations.

10:00AM

Panel Discussion

Technical Program

TUESDAY, OCTOBER 19



COOLING WATER, NPDES
CONCERNS — CURRENT/FUTURE
PERSPECTIVES FROM REGULATORS
(US EPA) AND INDUSTRY

2:00 PM – 5:00 PM

LOCATION

URBAN ROOM

Session Chair: Richard Hetherington,
Epicor Incorporated, Ft. Washington, PA

IWC Representative: David McFayden,
P.Eng., *Michael Baker Jr., Inc.,*
Coraopolis, PA

Discussion Leader: Kumar Sinha,
Bechtel Power Corporation, Frederick, MD

IWC-04-31

Paper

2:00PM

Modeling Leaching in Treated Wood Cooling Towers

Mark A. Janick, Lawrence Gasper, *Bechtel
Power Corporation, Frederick, MD*

In order for a new plant designer or operator who is performing cooling tower maintenance to predict if his discharges will be below discharge limits, it is critical to have a tool that estimates the quantity of trace metals that will be discharged. This paper discusses methods of modeling trace metal concentrations that are leached from wooden cooling towers, particularly during commissioning and early operation of the tower.

2:25PM

Prepared Discussion:
Paul Puckorius, *Puckorius & Associates, Inc.,
Evergreen, CO*

2:35PM

Closure & Floor Discussion

2:50-3:00PM

COFFEE BREAK

IWC-04-32

Report

3:00PM

Technology Based Effluent Standards — What's New at EPA

Deborah Nagle, *US EPA - Permits Division,
Washington, DC*

In the last year, EPA has promulgated new standards for Cooling Water Intake Structures and has proposed an 304(M) Effluent Guideline Plan for the next two years. How do these two actions impact the regulated

Technical Program

TUESDAY, OCTOBER 19

community? What type of comments did EPA receive from stakeholders? In general, what is EPA's experience dealing with industrial dischargers? What are EPA's next steps? This presentation will address each of these questions. In addition, the presentation will discuss EPA's five year strategic plan for water and relate how recent EPA actions to control industrial discharges help achieve established environmental goals.

3:20PM

Floor Discussion

IWC-04-33

Paper

3:30PM

I Hear What You're Saying, But I Don't Understand a Word of It

John Morton, P.E., *ALCOA, Inc., Pittsburgh, PA*

The Clean Water Act is over 30 years old, yet few seem to truly understand its requirements. Too often, we seem to be lost in a maze of myriad acronyms, archaic language and apparent convoluted mandates. Unless one understands the underlying principles of the Act, it is easy to spend significant amounts of time and resources on the "wrong" things and still not be in compliance.

3:55PM

Prepared Discussion:

Deborah Nagle, *US EPA - Permits Division, Washington, DC*

4:05PM

Closure & Floor Discussion

IWC-04-34

Report

4:20PM

Emerging Contaminants, Regulations, and Changes for Industrial Providers of Potable Water

Mark Rowzee, *Water Quality Association, Lisle, IL*

With final implementation of recent Safe Drinking Water Act requirements, industrial suppliers are now forced to pay more attention to drinking water concerns at their facilities, on top of their normal process water concerns.

4:40PM

Floor Discussion

Technical Program

TUESDAY, OCTOBER 19



PROS AND CONS OF AMINE USE IN INDUSTRIAL AND UTILITY POWER PLANTS WITH PANEL DISCUSSION

2:00 PM – 5:00 PM

LOCATION

MONONGAHELA ROOM

Session Chair: Deborah Bloom, *Nalco Company, Naperville, IL*

IWC Representative: David Simon, *Cyrus Rice Water Consultants, Pittsburgh, PA*

IWC-04-35

2:00PM

Report

Amine Use in High Pressure Steam Cycles and Boilers

Michael W. Rootham, *Mike Rootham & Associates, Delmont, PA*

IWC-03-12 discussed the use of amines in steam cycles and boilers and our review concluded that operation with amine treatment can provide benefits in terms of corrosion control in both all ferrous and mixed alloy systems. For plants operating at greater than 900 psig we concluded that additional studies are required to determine whether amines and their decomposition products have either a beneficial or adverse effect on turbine materials. This year's report updates progress made towards establishing the program of investigation required to answer these questions.

IWC-04-36

2:20PM

Report

Hazards of Amine Use In Boiler Systems

James Bellows, Ph.D., *Siemens Westinghouse Power Corporation, Orlando, FL*

Certain amines raise the pH of water phases very effectively in the presence of the vapor phase. However, amines decompose to organic acids, which may be corrosive, even in the presence of amines. The hazards are explored and risk is assessed, based on the available knowledge.

Technical Program

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IWC-04-37

Report

2:40PM

Use of Amines in HRSG Chemistry

William Moore, *Calpine, Houston, TX*

The use of amines instead of ammonia is preferred because amines provide a broader coverage of the entire steam system. In particular, low volatility amines are used to mitigate FAC in the LP steam system. Plant experiences with amine usage will be discussed.

3:00-3:10PM

COFFEE BREAK

IWC-04-38

Report

3:10PM

Application of a Non-Traditional Polyamine/Amine Treatment in High Pressure Drum Boiler Systems

Albert Bursik, *PowerPlant Chemistry GmbH, Neulussheim, Germany*

It is often stated that to evaluate the real impact of organics on the major cycle components, investigations with respect to selective corrosion effects of low-molecular acids (in particular on turbine materials) are required. In power plant cycle chemistry, many new developments have only been investigated subsequent to their use, i.e., after a successful or failed industrial application. This is also the case with organic cycle treatment chemicals. This contribution focuses on the polyamine/amine regime in cycles with drum boilers. Several case studies are discussed which demonstrate the positive experience with this organic cycle chemistry treatment in industrial power generation.

3:30PM

Panel Discussion

Technical Program

TUESDAY, OCTOBER 19



MEMBRANE SYSTEMS FOR USE
IN BOILER PLANTS AND FOR
POTABLE WATER PRODUCTION

2:00 PM – 5:00 PM

LOCATION

ALLEGHENY ROOM

Session Chair: Robert Taylor,
Ecolochem Inc., Norfolk, VA

IWC Representative: Malcolm Clemens,
Consultant, Pittsburgh, PA

Discussion Leader: Wayne Bernahl,
W. Bernahl Enterprises, Ltd., Elmhurst, IL

IWC-04-39

Paper

2:00PM

Understanding Reverse Osmosis

Jane Kucera, Nalco Company, Naperville, IL

Reverse osmosis (RO) has become a very popular and viable technology for demineralization. The technology, though widely applied, is still a bit of a mystery for most users. This paper will cover three topics that speak to the heart of operations for an RO system: pretreatment, data normalization, and membrane cleaning. Understanding these issues can help operators keep RO systems operating optimally at the lowest possible cost.

2:25PM

Prepared Discussion:

Kenneth J. Kozelski, DuPont, Camden, SC

2:35PM

Closure & Floor Discussion

2:50-3:00PM

COFFEE BREAK

IWC-04-40

Paper

3:00PM

**The Use of Reverse Osmosis as a
Pretreatment to a High Pressure
Steam**

Matthew White, Simon Gare, Ecolochem International, Inc., Peterborough, UK, Mike Dunham, Glow Power Co. Ltd, Map Ta Phut, Thailand

This paper discusses the feed water problems occurring at a power plant in Thailand before a membrane system was installed, the technology installed to combat these problems, the changes made to the chemical treatment of the plant, and the benefits the plant has seen to the water and steam system.

Technical Program

TUESDAY, OCTOBER 19

3:25PM Prepared Discussion:
Mike Preston, *Black & Veatch, Overland Park, KS*

3:35PM Closure & Floor Discussion

IWC-04-41 Paper

3:50PM Application of Membrane Filtration Technology for the Production of Drinking Water

Benjamin T. Antrim, Brian M. Kilcullen, *Koch Systems, Inc., Wilmington, MA*

EME - Homer City Generation LP installed a hollow fiber membrane filtration plant in the mid 1980's to provide its employees with drinking water from a surface water source. New water regulations and the requirement for increased data collection, instrumentation and output has led to the design and construction of a larger pretreatment/membrane system.

4:15PM Prepared Discussion:
Jantje Johson, *FilmTec TS & D, Edina, MN*

4:25PM Closure & Floor Discussion

Technical Program

WEDNESDAY, OCTOBER 20

7:30AM Registration desk opens

7:30-8:00AM Coffee Served



CHALLENGES IN TREATING,
MONITORING, & CONDITIONING
BOILER FEEDWATER FOR
POWER PLANTS

8:00 AM – Noon

LOCATION

MONONGAHELA ROOM

Session Chair: James Bellows, PhD.,
*Siemens Westinghouse Power
Corporation, Orlando, FL*

IWC Representative: Kumar Sinha,
Bechtel Power, Frederick, MD

Discussion Leader: Julius Isaac,
Bechtel Power Corporation, Frederick, MD

IWC-04-42

Report

8:00AM

**Total Organic Carbon Control
Experience For BWR Condensate
Polishing Performance**

Tung-Jen Wen, *Institute of Nuclear Energy
Research, Taoyuan, Taiwan, ROC*

Leaching extractables tests for the fresh and used resin is important to the reactor water control. Its contents will be used as a reliable reference to predict whether reactor sulfate ion can reduce to very low levels in a short period of time during operation. Total organic carbon concentration around 0.4 to 0.45 ppb in condensate demineralizer effluent seems to be quite acceptable to maintain reactor water in good conditions meeting with guidelines.

8:20AM

Floor Discussion

IWC-04-43

Report

8:30AM

**pH and CO₂ Determinations Based on
Power Plant Conductivity Measurements**

David Gray, *Mettler-Toledo Thornton, Inc.,
Bedford, MA*

pH may be calculated from specific and cation conductivity measurements. Within normal cycle chemistry conditions, this calculation is more accurate and reliable than pH measured with a glass electrode. Similarly,

Technical Program

WEDNESDAY, OCTOBER 20

CO₂ concentration may be inferred from cation and degassed cation conductivity measurements. On-line multiparameter instrumentation is capable of measuring or computing all of these parameters.

8:50AM

Floor Discussion

IWC-04-44

Report

9:00AM

Fear and Loathing at a Combined Cycle Power Plant — Ion Chromatography in a Box

Beverly Newton, Mike Doyle, *Dionex Corporation, Sunnyvale, CA*, Luis Carvalho, Ian Scarth, Peet Lindau, *GE Water and Process Technologies, Mississauga, Ontario, Canada*

This paper presents a report on a recent study of a low cost, hands-off ion chromatography solution for combined cycle power plants to provide on-line monitoring at the water panel for chloride and sulfate ions at 1 part per billion or below.

9:20AM

Floor Discussion

IWC-04-45

Paper

9:30AM

Predicting Corrosion and Scaling Tendencies in Industrial Boilers Using Novel Software Program

Abdulmohsen Almajnoui, *Saudi Aramco, Dhahran, Saudi Arabia*, Arif Jaffer, *Baker Petrolite, Sugar Land, TX*

A new software program that can predict scaling and corrosion tendencies based on relevant thermodynamic and transport processes in the steam cycle will be reviewed. The program, based on routine plant data, provides early warning of abnormal conditions and improves overall plant efficiency. The paper will also demonstrate cost benefit in implementing this unique tool in steam plants.

9:55AM

Prepared Discussion:
Douglas Dewitt-Dick, *Ashland Specialty Chemical Co., Boonton, NJ*

10:05AM

Closure & Floor Discussion

Technical Program

WEDNESDAY, OCTOBER 20

CHALLENGES IN TREATING, MONITORING, & CONDITIONING BOILER FEEDWATER FOR POWER PLANTS

IWC-04-46

Paper

10:20AM

Risk Mitigation by Managing Water Treatment System Interfaces in the Power Industry

Susan Baines, Kathi Kirschenheiter, Kumar Sinha, *Bechtel Power Corporation, Frederick, MD*

Managing power plant water treatment system interfaces for a LSTK Contract is critical to mitigate performance and guarantee risks for the EPC Contractor from development to commissioning. This paper describes the challenges of system integration and the management strategies used to smooth out the interfaces as illustrated by several case studies.

10:45AM

Prepared Discussion:

Bruce Larkin, *Black & Veatch, Overland Park, KS*

10:55AM

Closure & Floor Discussion

Technical Program

WEDNESDAY, OCTOBER 20

7:30-8:00AM Coffee Served



EDI: INNOVATIVE
APPROACHES AND
PRACTICAL APPLICATIONS

8:00 AM – Noon

LOCATION

ALLEGHENY ROOM

Session Chair: Ed Geishecker,
Consultant, Natick, MA

IWC Representative: Joseph Loftis,
Consultant, Pittsburgh, PA

Discussion Leader: Jantje Johnson,
FilmTec TS&D, Edina, MN

IWC-04-47

Report

8:00AM

Process and System Design for Reliable Operation of RO/EDI Systems

Jonathan Wood, Joseph Gifford, *USFilter,
Lowell, MA*

This report will explain some of the differences between electrodeionization and conventional deionization, and focus on designing RO/EDI systems to ensure reliable, long-term operation. Emphasis will be placed on process design, integration of the EDI with other unit operations, and how to avoid scaling, fouling, or degradation of the EDI modules.

8:20AM

Floor Discussion

IWC-04-48

Paper

8:30AM

EDI Performance: Operating Results for Sites Installed at Least Five Years

William Harvey, Ted Prato, *Ionics Incorporated,
Watertown, MA*

Successful long-term performance of EDI systems is a function of system design and membrane type. The performance data of several EDI systems installed at least five years are presented. The proper design of pretreatment and the operational requirements to sustain long membrane life and performance are also discussed.

8:55AM

Prepared Discussion:
Cheryl G. Sawyer, *Cogentrix, Suffolk, VA*

Technical Program

WEDNESDAY, OCTOBER 20

EDI: INNOVATIVE APPROACHES AND PRACTICAL APPLICATIONS

9:05AM

Closure & Floor Discussion

IWC-04-51

Paper

9:20AM

Introduction of Spiral Wound EDI — Exclusive Design and Its Application

Avijit Dey, Ph.D., Guanghui Li, *Omexell, Inc.,
Houston, TX*

Electrodeionization (EDI) has been widely used for ultrapure water production. For over 5 years, spiral wound EDI has shown equivalent or better performance in desalination as “plate and frame” designs, with many exclusive features such as an ideal cross flow, leak free design, ion exchange resin replacement, superior electrical insulation, light weight, and simple system integration.

9:45AM

Prepared Discussion:

Jonathan Wood, *USFilter, Lowell, MA*

9:55AM

Closure & Floor Discussion

Workshops

WEDS. & THURS., 10/20-21

Continuing Education Workshops at the IWC are intensive, single-topic focused sessions. Each Workshop requires an additional fee. Please see the Registration personnel at the Registration desk to sign up. Seating for each Workshop is limited, so please register early. Professional Development Hours (PDHs) will be provided upon request.

WATER SYSTEMS AND LEGIONNAIRES' DISEASE WORKSHOP

Wednesday, 1PM – 5PM
and Continued on Thursday, 8AM – Noon

Fee: \$200 per person

LOCATION VANDERGRIFT ROOM

Instructor: Paul Puckorius, *Puckorius & Associates, Inc., Evergreen, CO*

A workshop that outlines up to date knowledge and practical information on Legionella. It is a must for all end-users, suppliers, and consultants. This workshop provides the attendee with detailed information on the history, cause, testing, and control of Legionella bacteria in water-using systems. Specifically, evaporative cooling water, potable water, and other water systems are discussed as to the potential for contributing to or causing the spread of the Legionella bacteria. Case histories are reviewed relative to what occurred and what water treatment was utilized prior to and after the occurrence of an outbreak.

The newest and most effective water treatment programs will be outlined, while providing the benefits and limitations for each type of water system. Testing for Legionella has improved substantially for both field and lab detection techniques. These will be identified and discussed, and sources provided.

Another important topic includes the guidelines and actions needed to be taken by the end user and the water treatment supplier to develop an effective verification program relating to Legionella. Experts will present various portions of this course, and there is time for Q&A throughout the entire session.

This is not a medical discussion of the bacteria, the disease, or actions on individuals.

Paul R. Puckorius, President of Puckorius & Associates, Inc., has over 35 years of experience in the fields of cooling water, boiler water, and reuse water technology. His technical specialties include: corrosion, scale, and microbiological problem solving, as well as treatment selection and system start-ups. He has practical experience with industrial, refinery, and utility power station systems, including recirculating cooling tower systems and once-through cooling water systems. Mr. Puckorius is exceptionally proficient in coordinating water

Workshops

WEDS. & THURS., 10/20-21

and treatment usage. He has conducted numerous seminars pertaining to water programs, specific treatment availability, performance of programs, selection of proper programs relating to water characteristics, equipment design and operation, discharge of wastewater and cooling water blowdown, process and atmospheric contamination, and utilization of alternate water supplies. Mr. Puckorius assists plants with system audits, cost reductions, vendor specifications, reuse considerations, zero blowdown via softening, chromate elimination, development of conservation programs, and the optimum utilization of water and chemicals. He has worked with plants throughout the mainland United States, Hawaii, Canada, Mexico, Asia, Europe, and the Middle East.

CHEMICAL PRECIPITATION SOFTENING

Wednesday, 1PM – 5PM

Continued on Thursday, 8AM – Noon

Fees: Part 1 or Part 2 are \$125 each,
Both Parts 1 & 2 are \$200.

LOCATION

HEINZ ROOM

Instructor: Vijay Puri, *Ionex Water Treatment, Inc., Ingomar, PA*

It is one of the important pretreatment unit operation for both membrane and ion exchange processes as well as for the make up to the cooling towers and the side stream softening operations. A basic understanding of water chemistry and liquid solids separation is generated from this workshop that attendees would find most helpful to them in the operation of precipitation softening processes.

The course is divided into two parts and shall cover the following:

PART I (October 20, 2004)

- Basics of Water Chemistry addressing types of hardness, types of alkalinity, its distribution and relationship to pH, bar charting for a probable incoming water composition
- Functions of Chemical Precipitation Softening Process, Rules Governing Chemical Precipitation Softening System Performance, Softening Chemical Reactions with Different Treatment Chemicals, Selection Criteria of using different treatment chemicals, Silica/Colloidal Silica Removal
- Different types of precipitation softeners

Workshops

WEDS. & THURS., 10/20-21

CHEMICAL PRECIPITATION SOFTENING

PART II (October 21, 2004)

- Review of Chemical Reactions in precipitation Softening
- Impact of coagulants both inorganic and organic in precipitation softening process
- Hydraulic Aspects in precipitation softening such as velocity gradients and mixing energies and determination of overflow rates in Lime Softening Units.
- Predicting Estimated Hardness and probable effluent composition in the treated effluent
- Factors affecting Treated Water Quality
- Common Problems and Their Solutions
- Impact of Lime Softening on downstream Unit Operations such as Filters, Ion Exchange Units, Membranes.

Vijay Puri received his graduate degree in Chemical Engineering in 1964 from Punjab University, India and since then he has been working in the field of Water Treatment. He has been a member of AIChE, AWWA, and ACS and was a course co-director of Liberty Bell Corrosion Course. He had designed, started up and has hands-on experience on different types of water treatment unit processes such as raw water clarification, hot and cold precipitation softening, filtration, ion exchange, and membrane systems. He has published a Primer on *"Pretreatment of Water for Steam and Cooling Water"* and a book on *"Demineralization Fundamentals and Operating Design Manual"*. He was recipient of merit awards of outstanding performance from Calgon Corporation. Mr. Puri is presently Technical Director of Ionex Water Treatment and President of Purichem Specialty Chemicals.

2004 Exhibit Hall

17TH FLOOR, GRAND BALLROOM

EXHIBIT HALL HOURS

Sunday Hours: 5PM to 8PM
Monday Hours: Noon-2PM, 4:30-7PM
Tuesday Hours: Noon-2PM

ABB INC.

BOOTH: 27

Contact: Andy Szeto
Phone: 775-850-4800
Fax: 775-850-4808
Email: andy.szeto@us.abb.com
Website: www.abb.com/instrumentation

ABB manufactures analyzers for the process, environmental, power generation and food industries. We have an unparalleled record of innovation in the field of analytical measurements. Our capability embraces one of the largest analytical instrument and sensor portfolios, which includes pH, conductivity, dissolved oxygen, turbidity, nitrogen, sodium, silica, and phosphate.

AMBI-DESIGN INCORPORATED

BOOTH: 32

Contact: Shan S. Sundaram, PE, President
Phone: 815-964-7568
Fax: 815-654-3540

Ambi-Design, Inc. designs, engineers and builds custom designed large water treatment, chemical purification/recovery and wastewater treatment systems. ADI is a leading expert in system retrofits and fabrication of internal distributors (CPVC, SST, Alloy 20, Hastelloy C-276) with polypropylene and wedgewire screens.

AQUATECH INTERNATIONAL CORPORATION

BOOTH: 10

Contact: Karin L. Brightwell
Phone: 724-746-5300
Fax: 724-746-5359
Email: brightwellkl@aquatech.com
Website: www.aquatech.com

Let Aquatech be your single source for all of your water treatment needs. For over two decades, Aquatech has provided industry worldwide with proven water and wastewater treatment systems.

2004 Exhibit Hall

17TH FLOOR, GRAND BALLROOM

We are committed to maintaining technical leadership in:

Raw Water Treatment
Ion Exchange
Membrane Systems
Wastewater Recycle/Reuse
Industrial Concentration
Zero Liquid Discharge
Desalination

As a licensee of the patented HERO™ (High Efficiency Reverse Osmosis) Technology, we can offer economically competitive solutions for stringent environmental Zero Liquid Discharge constraints.

CHEMTRAC SYSTEMS, INC.

BOOTH: 1

Contact: Susan Brommer
Phone: 770-449-6233
Email: chemtrac@chemtrac.com
Website: www.chemtrac.com

Since 1985, Chemtrac Systems Inc. has been a leading manufacturer of process monitoring and control instruments used in water, wastewater, and other industrial processes. However, the company's reputation and growth has been built around one mission — "RESULTS for the customer". This will never change. We understand that our success depends on meeting and exceeding our customers' expectations. With defined objectives and joint commitments, we will achieve the results you want.

DIONEX CORPORATION

BOOTH: 19

Contact: Angie Jinks
Phone: 408-481-4275
Fax: 408-735-9413
Email: angie.jinks@dionex.com
Website: www.dionex.com

Ion Chromatographic solutions for water and chemical analysis. The latest advances in ultra low-level detection of anions, cations and transition metals using the Dionex Reagent-Free™ eluent generation technology. Dionex will feature the ICS-2000 (winner of Pittcon 2003 Editors Choice Award for Best New Product), DX- 800 and Eluent Generator analytical instruments for the analysis of pure water, power matrices, wastewater and process chemicals.

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ECODYNE LIMITED

BOOTH: 13

Contact: Paul Kitchen
Phone: 905-332-1404
Fax: 905-332-6726
Email: info@ecodyne.com
Website: www.info@ecodyne.com

Ecodyne designs and manufactures water treatment equipment and systems worldwide. Ecodyne offers deaerators, ion exchange equipment, reverse osmosis systems and EDI technology as well as cooling tower design, construction, upgrades and repairs. Principal markets include power generation, oil and gas, chemical, pulp and paper as well as municipal potable water.

ECO-TEC INC.

BOOTH: 15

Contact: Shona Gray
Phone: 905-427-0077
Fax: 905-427-4477
Email: ecotec@eco-tec.com
Website: www.eco-tec.com

Eco-Tec Inc. designs and manufactures economical, high performance, fully automated, integrated water treatment systems - including demineralization, filtration, reverse osmosis, condensate polishing and softening systems used in new and retrofit power generation and process steam applications.

With over 1,000 installations worldwide, Eco-Tec is a leader in advanced ion exchange technology. The patented Recoflo process reduces installation and operating costs, prolongs resin life and maintains high product purity.

ENRICH PRODUCTS

BOOTH: 21

Contact: Neil Silverberg, President
Phone: 800-369-7662
Fax: 412-243-9420
Email: enrichpro1@aol.com
Website: www.copprsilver.com

The Copper Silver Ionization process is acknowledged as the most efficacious mode of disinfection for Legionella. Tarn-Pure™ has been providing users with the highest quality and most advanced systems since 1980. A reduced scaling flow cell is one of many features exclusive to Tarn-Pure™ Systems.

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GRAVER WATER SYSTEMS, INC.

BOOTH: 13

Contact: Robert Applegate
Phone: 908-653-4200
Fax: 908-653-4300
Email: rapplegate@graver.com
Website: www.graver.com

Graver Water Systems, Inc. designs and manufactures water and wastewater treatment equipment and systems. Graver's engineers are knowledgeable in pretreatment, degasification, hot lime softening, boiler make-up, condensate polishing, wastewater treatment, cooling water treatment, and oil/water separation for industrial plants and electric utilities on a global basis.

HACH COMPANY

BOOTH: 8

Contact: Steve Krchnav
Phone: 800-227-4224
Fax: 814-364-2696
Email: skrchnav.com
Website: www.hach.com

Hach Company provides advanced analytical systems and technical support for water quality testing, with solutions for lab, process, and field. Our systems are designed to simplify analysis, and include: complete, easy-to-follow methods, high-quality prepared reagents, accurate instrumentation, life-time technical support. Hach preprogrammed instruments and prepared, pre-measured reagents save time and reduce the chance of error. Our products are in use around the world, simplifying analysis with reliable, accurate results. For more information, visit us at www.hach.com.

HALOX TECHNOLOGIES, INC.

BOOTH: 5

Contact: Tom Lillis
Phone: 203-334-6278
Fax: 203-334-6198
Email: Tlillis@haloxtech.com
Website: www.haloxtech.com

Halox Technologies, Inc., a Unit of IDEX Corporation, develops, manufactures, sells and supports electrochemical systems and ancillary equipment for generating, delivering, and measuring chlorine dioxide (ClO₂), a highly effective biocide. Major applications include healthcare facilities, food and beverage processing, potable water systems and cooling towers.

2004 Exhibit Hall

17TH FLOOR, GRAND BALLROOM

INDUSTRIAL ANALYTICS CORPORATION

BOOTH: 6

Contact: Nick Afragola
Phone: 203-245-0380
Fax: 203-245-3698
Email: nafragola-IAC@sbcglobal.net
Website: www.swan.ch

Industrial Analytics is the US Distributor for SWAN Analytical Instruments Line of Water Quality Monitors. Parameters include sodium, dissolved oxygen, silica, phosphate, Ph/ORP, hydrazine, conductivity, and disinfectants for the power industry.

INTEGRATED SEPARATION SOLUTIONS, LLC

BOOTH: 22

Contact: Hillary Erickson
Phone: 608-276-6850
Fax: 608-276-6856
Email: hillarye@isepsol.com
Website: www.isepsol.com

Complete line of water treatment service and equipment including filtration, ion exchange, EDI, and reverse osmosis for production of pure water for the power, pharmaceutical, semiconductor, and other industries.

IONICS/ECOLOCHEM, INC.

BOOTH: 12

Contact: Paul C. Hoppenjans, Marketing Services Manager
Phone: 757-855-9000
Fax: 757-855-2300
Email: sales@ecolochem.com
Website: www.ecolochem.com

Ionics offers a broad range of membrane-based and thermal water treatment technologies including UF, RO, EDI, Evaporation and Crystallization. Ionics provides water treatment solutions including purchase and service options, and incorporating Ecolochem® mobile services and outsourcing capabilities, and the DeltaFlow® system which provides ultrapure water without chemicals.

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17TH FLOOR, GRAND BALLROOM

IONPURE TECHNOLOGIES, INC.

BOOTH: 9

Contact: Stefan M. Abramo
Phone: 978-614-7521
Fax: 978-764-6864
Email: abramos@usfilter.com
Website: www.ionpuretech.com

Ionpure Technologies, Inc. is a company devoted to the development and commercialization of Continuous Electro – Deionization (CEDI) products. With over 14 years of experience in delivering CEDI products, and in excess of 200 years of CEDI R&D experience, Ionpure Technologies recently launched the “Ionpure” branding effort to introduce and sell the LX Series of products to third party OEM’s.

At IWC, Ionpure Technologies (www.ionpuretech.com) will introduce the new VNX Series of CEDI module developed for high flow CEDI applications.

LAMOTTE

BOOTH: 28

Contact: Tom Seechuk
Phone: 410-778-3100
Fax: 410-778-6394
Email: mkt@lamotte.com
Website: www.lamotte.com

LaMotte offers meters, kits and test strips for analysis of boiler, cooling, potable and wastewater. Strips include tests for low and high chlorine dioxide and low molybdenum. Meters include a spectrophotometer and multi-wave colorimeter which can test 70+ factors in the field or lab. Test kits include standard tests as well as custom and private labeled kits.

PENNWELL

BOOTH: 4

Contact: Shirley Wilson
Phone: 918-831-9447
Fax: 918-831-9834
Email: shirleyw@pennwell.com
Website: www.pennwell.com

PennWell will showcase its Industrial WaterWorld and Power Engineering Magazines. Industrial WaterWorld serves the industrial process and wastewater market in the United States and Canada. Power Engineering covers the power generation industry, with recurring features on water treatment systems for various power plant applications (boilers, HRSGs, cooling towers, etc.).

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17TH FLOOR, GRAND BALLROOM

PROMINENT FLUID CONTROLS, INC.

BOOTH: 29

Contact: Susan Heizler
Phone: 412-787-2484
Fax: 412-787-0704
Email: sales@prominent.cc
Website: www.prominent.cc

ProMinent Fluid Controls, Inc. is a global manufacturer of chemical metering pumps, measurement and control instrumentation, disinfection systems and custom designed chemical feed systems.

PUROLITE COMPANY

BOOTH: 20

Contact: Don Downey
Phone: 800-343-1500
Fax: 610-668-8139
Email: info@puroliteusa.com
Website: www.puroliteusa.com

Purolite is the world leading in ion exchange manufacturing capabilities. With international manufacturing locations, world class research facilities, and engineering personal located around the world we can supply AND service any resin requirement.

RESINTECH, INC.

BOOTH: 17

Contact: Frank DeSilva, National Sales Manager
Phone: 856-768-9600
Fax: 856-768-9601
Email: ixresin@resintech.com
Website: www.resintech.com

ResinTech is a manufacturer and supplier of ion exchange resins, activated carbon and Aries Filterworks point-of-use DI water loops and cartridges. This year ResinTech is showcasing their ULTRA line of pre-regenerated and mixed bed resins, including ResinTech MBD-ULTRA, the highest purity effluent mixed bed resin available. ResinTech MBD-ULTRA is the product of choice for use in semiconductor, pharmaceutical, and ultrapure applications that demand low TOC, high resistivity water.

Don't miss the ResinTech sponsored 18th Annual Fun Run Tuesday morning!

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ROHM AND HAAS COMPANY

BOOTH: 14

Contact: Claire Murphy
Phone: 215-592-2557
Fax: 215-409-4534
Email: clairemurphy@rohmmaas.com
Website: www.rohmmaas.com

Rohm and Haas manufactures a complete line of ion exchange resins and adsorbents for the water treatment industry. Amberlite®, Amberjet®, Ambersep® and Amberpack® are Rohm and Haas trademarks.

SCHREIBER LLC

BOOTH: 3

Contact: Bill Kunzman
Phone: 205-655-7466
Fax: 205-655-7669
Email: billk@schreiberwater.com
Website: www.schreiberwater.com

Serving Industrial & Municipal markets since 1979, Schreiber Corporation solves wastewater treatment problems through the application of energy-efficient, innovative, and proprietary equipment/process technology. Schreiber offers a complete system from head works to tertiary filtration. Our patented treatment processes such as the Continuous Sequencing Reactor® and compressible media filter "Fuzzy Filter®" combine effectiveness and efficiency to produce the industry's highest quality products.

SENTRY EQUIPMENT CORP.

BOOTH: 26

Contact: Myron Feldman/Robin R. Jaeger
Phone: 262-567-7256
Fax: 262-567-4523
Email: RobinJ@sentry-equip.com

Sentry Equipment Corp is a worldwide supplier and technological leader in the manufacture, marketing and servicing of sampling components and systems and specialty heat exchangers.

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SEVERN TRENT SERVICES (CAPITAL CONTROLS)

BOOTH: 24

Contact: Richard A. Mitman
Phone: 215-997-4031
Fax: 215-997-4062
Email: rmitman@capitalcontrols.com

Severn Trent Services is the leading supplier of disinfection systems utilizing chlorine, sodium hypochlorite, chlorine dioxide, ammonia, sulfur dioxide, carbon dioxide, chemical metering systems, ultraviolet systems, dry/liquid polymer feed systems, and filtration for water and wastewater treatment.

Severn Trent Services also designs complete systems and provides service support of equipment for industrial treatment systems.

SYBRON CHEMICALS INC.

BOOTH: 11

Contact: Mechelle Jones
Phone: 609-893-1100 x357
Fax: 609-894-8641
Email: mjones@sybronchemicals.com
Website: www.ionexchange.com

Sybron Chemicals Inc., a Lanxess Company, provides world-class ion exchange resins to meet your needs. From cocurrent softening to condensate polishing, Lewatit MonoPlus™ uniform-particle size resins, and specialty resins, have proven their values across the water treatment market. Lanxess is also unique in its water treatment chemicals, including the Preventol® and Baypure® product lines, as well as Bayhibit® and Hydrazine Hydrate.

THERMAX INC.

BOOTH: 25

Contact: Anand Harohalli
Phone: 248-474-3050
Fax: 248-474-5790
Email: anand@thermax-usa.com
Website: www.thermax-usa.com

Manufactures and distributes a wide variety of Ion Exchange Resins for water treatment applications, such as water softening, demineralization, color (tannin) removal, nitrate removal, metal removal, etc. Tulsion resin are manufactured in ISO-9000 certified Manufacturing facility. Thermax is also an ISO-14001 company.

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WATER & POWER TECHNOLOGIES, INC.

BOOTH: 18

Contact: Chuck Berg
Phone: 801-844-4552
Fax: 801-973-9733
Email: chuck.berg@earthtech.com
Website: www.wpt.com

Water & Power Technologies (WPT) manufactures custom-designed, skid-mounted and mobile DI water purification systems, including reverse osmosis, ultrafiltration, demineralization, electrodeionization, cartridge filtration, multimedia filters, chemical injection, storage tanks, backwash systems, forwarding pumps, manganese-greensand filters, activated-carbon filters, softeners, etc. We offer engineering services and outsourcing (water-by-the-gallon contracts).

WATER QUALITY ASSOCIATION (WQA)

BOOTH: 2

Contact: Mark Rowzee
Phone: 630-505-0160
Fax: 630-505-9637
Email: Mrowzee@mail-wqa.org
Website: www.wqa.org

An international trade association representing the household, commercial, industrial, and small community water treatment industry. WQA maintains close dialogue with organizations representing different aspects of the water industry. WQA provides technical services, education, product certification, and government relations support. WQA produces the annual WQA Aquatech USA Trade Show.

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WATERS EQUIPMENT/
NEPTUNE CHEMICAL PUMP CO.

BOOTH: 16

Contact: Brian Reichley
Phone: 215-699-8700
Fax: 215-699-8795
Email: brianr@watersequipment.com

Waters Equipment has been building custom steam/water sampling and analysis systems for over 40 years. Additionally, we manufacture sample coolers, pressure reducers, refillable resin columns, high temperature shut-off valves, temperature control valves, portable samplers, multi-stream sequencers, single-point sample conditioning modules, cooling water isolation skids and hotwell samplers.

Neptune Chemical Pump Company manufactures a complete line of chemical metering pumps, portable mixers and chemical injection accessories. Manufactures standard and custom chemical feed systems.

ZENON ENVIRONMENTAL INC.

BOOTH: 23

Contact: John Elliott & Tanya Hughes
Phone: 905-465-3030
Fax: 905-465-3050
Email: thughes@zenon.com
Website: www.zenon.com

ZENON supplies membrane based water and wastewater technology for the Industrial and Power markets including ultra filtration, reverse osmosis, ion exchange and ancillary equipment. Our ZeeWeed[®] immersed hollow fibre UF membrane has been successfully applied on a variety of applications as pre-treatment to reverse osmosis.

Info-Share Suites

Since 1955, companies have sponsored suites which provide technical information and business assistance. These informal meetings with experienced, knowledgeable experts help with problem solving, discovering new products and processes and new applications. You meet some very interesting people too.

ALCO CHEMICAL

ROOM: # 736 7TH FLOOR

Contact: Michael L. Standish
Phone: 423-629-1405 ext. 233
Fax: 423-698-8723

Hours of operation

Monday: 5 PM - 11 PM
Tuesday: 5 PM - 11 PM

Provider of polymers for scale and deposit control for cooling towers, boilers, pulp & paper mills and other industrial process waters, industrial microbicides for industrial process waters. Metal precipitants for removal of heavy metal.

AMBI-DESIGN, INC.

ROOM: # 618 6TH FLOOR

Contact: Shan S. Sundaram, P.E.
Phone: 815-964-7568
Fax: 815-654-3540

Hours of operation

Sunday: 8 PM - 11 PM
Monday: 8:30 AM - Noon; 2 PM - 4:30 PM;
8:30 PM - 11 PM
Tuesday: 8 AM - Noon; 2 PM - 7 PM; 9 PM - 11 PM
Wednesday: 8 AM - 11 AM

Ambi-Design, Inc. designs, engineers and builds custom designed large reverse osmosis and ion exchange systems for water treatment, chemical purification/recovery and wastewater treatment. ADI is a leading expert in system retrofits and fabrication of internal distributors (CPVC, SST, Alloy 20, Hastelloy C-276) with polypropylene and wedgewire screens.

Info-Share Suites

AQUATECH INTERNATIONAL CORPORATION

ROOM: CONFERENCE CENTER A CONFERENCE

Contact: Karin L. Brightwell, Marketing Comm. Mgr.
Phone: 724-746-5300
Fax: 724-746-5359
Email: brightwellkl@aquatech.com
Website: www.aquatech.com

Hours of operation

Monday: 6:00 PM - 9:00 PM
Tuesday: 2:00 PM - 9:00 PM

Let Aquatech be your single source for all of your water treatment needs. For over two decades, Aquatech has provided industry worldwide with proven water and wastewater treatment systems. We are committed to maintaining technical leadership in:

Raw Water Treatment
Ion Exchange
Membrane Systems
Wastewater Recycle/Reuse
Industrial Concentration
Zero Liquid Discharge
Desalination

As a licensee of the patented HERO™(High Efficiency Reverse Osmosis) Technology, we can offer economically competitive solutions for stringent environmental Zero Liquid Discharge constraints.

ASHLAND SPECIALTY CHEMICAL COMPANY/ DREW INDUSTRIAL

ROOM: # 1503 15TH FLOOR

Contact: Cheryl Medici
Phone: 973-263-7830
Fax: 973-263-4483
Email: camedici@ashland.com
Website: www.drewindustrial.com

Hours of operation

Monday: 5:00 PM - 11:00 PM
Tuesday: 5:00 PM - 11:00 PM

Ashland Specialty Chemical's Drew Industrial is a leader in specialty chemicals and services for industrial water and fuel treatment, wastewater treatment, commercial and industrial water treatment, pulp and paper processing, mining and geothermal applications and paint, latex, ink and adhesive formulations. Our World Wide Web site (www.drewindustrial.com) offers a comprehensive source of information about Drew Industrial and access to information about other Ashland divisions, products, capabilities and services.

Info-Share Suites

THE DOW CHEMICAL COMPANY

ROOM: SKY ROOM 17TH

Contact: Melissa Beck/Kristina Schnepf
Phone: 800-447-4369 or 989-832-1556
Fax: 989-832-1465
Email: Beck3@dow.com; kaschnepf@dow.com
Website: www.dowex.com; www.filmtec.com

Hours of operation

Sunday: 5:00 - 8:00 PM
Monday: Noon - 2:00 PM; 4:30 PM - Midnight
Tuesday: Noon - 2:00 PM

The Liquid Separations Business of The Dow Chemical Company is a leading supplier of both FILMTEC™ reverse osmosis membranes and DOWEX® ion exchange water treatment technologies. Our suite will be open during exhibit hall hours. Join us for our 5th Annual Monday Night Football event starting at 7:00 PM; this relaxing atmosphere offers opportunities to obtain technical information and business assistance.

ECODYNE LIMITED

ROOM: PARLOR E&F 17TH FLOOR

Contact: Paul Kitchen
Phone: 905-332-1404
Fax: 905-332-6726
Email: info@ecodyne.com
Website: www.info@ecodyne.com

Hours of operation

Monday: 10 AM - Noon; 2 PM - 6:30 PM
Tuesday: 10 AM - Noon; 2 PM - 6:30 PM
Wednesday: 9 AM - 11 AM

Ecodyne designs and manufactures water treatment equipment and systems worldwide. Ecodyne offers deaerators, ion exchange equipment, reverse osmosis systems and EDI technology as well as cooling tower design, construction, upgrades and repairs. Principal markets include power generation, oil and gas, chemical, pulp and paper as well as municipal potable water.

Info-Share Suites

EPICOR, INCORPORATED

ROOM: ROYAL 15TH FLOOR

Contact: Rose Bussiculo
Phone: 908-925-0800
Fax: 908-925-7795
Email: epicorinc@aol.com

Manufacturer of powdered resins and resin-fiber mixtures, specially-formulated, custom-blended bead resin. OEM distributor for Rohm & Haas, Dow and Sybron. Epicor also furnishes condensate polishing equipment.

GRAVER TECHNOLOGIES

ROOM: PARLOR D 17TH FLOOR

Contact: Mark Koster
Phone: 302-731-1700
Fax: 302-731-1707
Email: mkoster@gravertech.com

Hours of operation

Monday: 10 AM - Noon; 2 PM - 6:30 PM

Tuesday: 10 AM - Noon; 2 PM - 6:30 PM

Wednesday: 9 AM - 11 AM

Graver Technologies (formerly Graver Chemical Company) provides Gravex®, Powdex®, and Ecodex®, powdered ion exchange resins; whole bead resins manufactured by major ion exchange companies; Aegis® precoat filters and septa, AFA™ pleated filters, Dualguard™ filters and Scepter® sintered metal membranes. We specialize in condensate make-up and all other water purification systems in utility power plants.

Info-Share Suites

GRAVER WATER SYSTEMS, INC.

ROOM: **PARLOR E&F** **17TH FLOOR**

Contact: Robert Applegate
Phone: 908-653-4200
Fax: 908-653-4300
Email: rapplegate@graver.com
Website: www.graver.com

Hours of operation

Monday: 10 AM - Noon; 2 PM - 6:30 PM

Tuesday: 10 AM - Noon; 2 PM - 6:30 PM

Wednesday: 9 AM - 11 AM

Graver Water Systems, Inc. designs and manufactures water and wastewater treatment equipment and systems. Graver's engineers are knowledgeable in pretreatment, degasification, hot lime softening, boiler make-up, condensate polishing, wastewater treatment, cooling water treatment, and oil/water separation for industrial plants and electric utilities on a global basis.

IONICS/ECOLOCHEM, INC.

ROOM: **# 627** **6TH FLOOR**

Contact: Paul C. Hoppenjans
Phone: 757-855-9000
Fax: 757-855-2300
Email: paul.hoppenjans@ecolochem.com

Hours of operation

Sunday: 5:00 PM - 11:00 PM

Monday: 5:00 PM - 11:00 PM

Tuesday: 5:00 PM - 11:00 PM

Ionics offers a broad range of membrane-based and thermal water treatment technologies including UF, RO, EDI, Evaporation and Crystallization. Ionics provides water treatment solutions including purchase and service options, and incorporating Ecolochem® mobile services and outsourcing capabilities, and the DeltaFlow® system which produces ultrapure water without chemicals.

Info-Share Suites

METTLER-TOLEDO THORNTON, INC.

ROOM: # 716 7TH FLOOR

Contact: David Gray & Jen Braithwaite
Phone: 781-301-8600
Fax: 781-301-8701
Email: dgray@thorntoninc.com
jbraithwaite@thorntoninc.com
Website: www.thorntoninc.com

Hours of operation

Sunday: 8:00 PM - 11:00 PM
Monday: 7:00 PM - 11:00 PM
Tuesday: 4:00 PM - 11:00 PM

Mettler-Toledo Thornton, Inc. develops and manufactures liquid process measurement/control instrumentation and sensors for pure water treatment systems, cycle chemistry monitoring, pharmaceutical waters, semiconductor fabrication and wastewater monitoring. Measurements include conductivity, resistivity, pH, dissolved oxygen, TOC, flow, ORP, temperature, pressure, and tank level. Thornton is a business unit of Mettler-Toledo's Process Analytics Division.

NEPTUNE CHEMICAL PUMP CO., INC.

ROOM: OLIVER ROOM CONFERENCE

Contact: Tom O'Donnell
Phone: 215-699-8700
Fax: 215-699-0370
Email: tomo@neptune1.com
Website: www.neptune1.com

Hours of operation

Monday: 2:00 - 4:00 PM & 7:00 - 9:00 PM

Neptune Chemical Pump Company manufactures a complete line of chemical metering pumps, portable mixers and chemical injection accessories. Manufactures standard and custom chemical feed systems.

Info-Share Suites

RESINTECH INC.

ROOM: #1636 16TH FLOOR

Contact: Frank DeSilva
Phone: 856-768-9600
Fax: 856-768-9601
Email: ixresin@resintech.com
Website: www.resintech.com

Hours of operation

Monday: 11 AM - 11 PM

Tuesday: 11 AM - 11 PM

Wednesday: 11 AM - 1 PM

ResinTech is a manufacturer and supplier of ion exchange resins, activated carbon and Aries Filterworks point-of-use DI water loops and cartridges. This year ResinTech is showcasing their ULTRA line of pre-regenerated and mixed bed resins, including ResinTech MBD-ULTRA, the highest purity effluent mixed bed resin available. ResinTech MBD-ULTRA is the product of choice for use in semiconductor, pharmaceutical, and ultrapure applications that demand low TOC, high resistivity water.

Don't miss the ResinTech sponsored 18th Annual Fun Run Tuesday morning!

ROHM AND HAAS COMPANY –
ION EXCHANGE RESINS

ROOM: # 1550 15TH FLOOR

Contact: Claire Murphy & Patricia Fischer
Phone: 215-592-2557/215-592-2312
Fax: 215-409-4534
Email: clairemurphy@rohmmaas.com;
patriciafisher@rohmmaas.com
Website: www.rohmmaas.com

Hours of operation

Sunday: 4:30 PM - 7 PM; 9 PM - 11 PM

Monday: 4:30 PM - 7 PM; 9 PM - 11 PM

Tuesday: 4:30 PM - 7 PM; 9 PM - 11 PM

Rohm and Haas Company manufactures a complete line of ion exchange resins and adsorbents for the water treatment industry. Amberlite, Amberjet, Ambersep and Amberpack are Rohm and Haas trademarks.

Info-Share Suites

SYBRON CHEMICALS INC.

ROOM: **FRICK ROOM** **CONFERENCE**

Contact: Mechelle Jones
Phone: 609-893-1100 x357
Fax: 609-894-8641
Email: mjones@sybronchemicals.com
Website: www.ionexchange.com

Hours of operation

Monday: 6:00 PM - 12:00 PM

Sybron Chemicals Inc., a Lanxess Company, provides world-class ion exchange resins to meet your needs. From cocurrent softening to condensate polishing, Lewatit MonoPlus™ uniform-particle size resins, and specialty resins, have proven their values across the water treatment market. Lanxess is also unique in its water treatment chemicals, including the Preventol® and Baypure® product lines, as well as Bayhibit® and Hydrazine Hydrate.

WATERS EQUIPMENT COMPANY

ROOM: **OLIVER ROOM** **CONFERENCE**

Contact: Brian Reichley
Phone: 215-669-8700 x 330
Fax: 215-699-8795
Email: brianr@watersequiment.com
Website: www.watersequiment.com

Hours of operation

Monday: 2:00-4:00 PM, 7:00 - 9:00 PM

Waters Equipment has been building custom steam/water sampling and analysis systems for over 40 years. Additionally, we manufacture sample coolers, pressure reducers, refillable resin columns, high temperature shut-off valves, temperature control valves, portable samplers, multi-stream sequencers, single-point sample conditioning modules, cooling water isolation skids and hotwell samplers.

Notes

Notes