



WORLD SALT SYMPOSIUM

Salt of the Earth: 2018 World Salt Symposium

June 19-21, 2018
Park City, Utah





Sponsors

GOLD



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Welcome to Park City and the 10th World Salt Symposium!

June 19, 2018



Lori Roman
President, Salt
Institute

In 1962, salt producers, business leaders, researchers, academics, health experts, and scientists from all regions of the globe gathered at the first World Salt Symposium in Cleveland, Ohio, USA. Since that time the meeting has been held in different parts of the globe periodically, most recently in Beijing, China in 2009. Over time, the technologies for producing salt and the understanding of its life saving and life enhancing uses have developed dramatically. This week there will be groundbreaking and newsworthy information shared in many areas, and specifically in the field of salt and health where world renowned speakers will present evidence that dispels misconceptions about salt. The World Salt Symposium is the most comprehensive and important meeting on the subject of salt and we are glad you are here to share in all of it, from the research to the celebrations.

The Salt Institute (SI) is happy to host this crucial meeting, back in the U.S. for the first time since 1973. The Salt Institute, started in 1914, represents salt producers from North America and around the world. And since that first symposium in 1962, SI has painstakingly archived every technical paper presented at each meeting. Recently, the SI staff created a website to host a free online global repository of all the technical papers accepted for presentation at each World Salt Symposium. We have made this available to the general public in a searchable digital format. It stands as a permanent archive of decades of research into the subject of salt, as well as an ongoing portal for information on upcoming symposia. We trust that you have found www.worldsaltsymposium.org to be helpful as you prepared for this conference. While the host country may change with each symposium, the Salt Institute has committed to preserving this archive in keeping with its mission to analyze research and public policy, dispel inaccuracies in public knowledge, and foster increased understanding of the life enhancing qualities of salt, while adhering to sound science.

We have been pleased to see the high level of interest in this meeting. From the top of this mountain to the bottom of this mountain here in Park City, we are celebrating salt! We are grateful to you for attending and to our sponsors and the other salt organizations around the world who worked together to bring all of us to this important event in such a beautiful location. On behalf of the Salt Institute staff and the Salt Institute Board of Directors we would like to thank the members of our organizing committee who helped make this event possible, especially Mao Qingguo, Chairman, China Salt Association, Wouter Lox, Managing Director of EU salt, and Ismail Suttar, CEO HubSalt.

Lori Roman
President, Salt Institute

“Everything’s better with a little salt.”



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Registration

Registration

We encourage guests to check in at registration Monday, June 18th, to avoid possible crowds on Tuesday. Registration will be open from 12:00 PM. to 8:00 PM. on Monday. If you are staying at Montage Deer Valley, please register there on Monday. If you are staying at any other hotel, please register at the Stein Eriksen Lodge.

On Tuesday, all attendees who have not done so should check in at registration at Stein, regardless of hotel. Registration will be open from 8:00 AM to 6:00 PM on Tuesday.

Late arrivals should go to the Information Desk at Stein for assistance.

Badge and registration requirements:

Please wear your badge during the World Salt Symposium and during any associated events. When you retrieve your badge from the registration area please be sure to double check the spelling of your name. Corrections can be made onsite. If you have pre-registered for a Salt Production Tour, this will be indicated on your badge and you will need it to board the bus.

Speaker/Presenter Check In Oslo Room

If you are a presenter, you must check in at the Oslo Room (Greenroom) on the day you are speaking.

If you are speaking in a morning session, please check in between 7:30 AM and 8:00 AM.

If you are speaking in an afternoon session, please check in between 11:30 AM and 12:00 PM.

The Oslo Room (Greenroom) is located one floor down from main registration in the Stein Eriksen Hotel. Take the elevator to the Lower Level, take an immediate right and the room is straight ahead at the end of the hallway. You may also take the "Exit" stairway, walk down two flights of stairs, exit the door on the left-hand side, turn right and the room is straight ahead.

General Information

Hotels and contact information:

Stein Eriksen Lodge – Deer Valley
Telephone: (800) 453-1302
reservations@steinlodge.com

Chateaux – Deer Valley
Telephone: (435) 658-9500
reservations@steinlodge.com

Montage Deer Valley
Telephone: (435) 604-1300
mdvreservations@montagehotels.com

Transport around the venue:

Transportation around Park City is easy. The Stein Eriksen Lodge and The Chateaux are across the street and an easy walk from one another. The Montage is just up the mountain and we offer free shuttle service back and forth. The hotels also offer shuttle service to downtown Park City.

Shuttle bus service will be provided between the Montage and The Stein.

No buses on Monday.
Tuesday – 8:00 AM to 9:00 PM
Wednesday – 7:30 AM to 10:00 PM
Thursday – 7:00 AM to 12:30 PM

If you require assistance getting from the bus stop to the Stein, transport is available. Please contact the main desk at the Stein lobby for help.

Dress Code:

The dress code for the World Salt Symposium is business casual.

Weather/Altitude:

The summertime weather in Park City is excellent but there are a few important things to keep in mind. The altitude is over 8,000 feet (2,400 meters) and it may take a day to get acclimated. The air is very dry so be sure to stay hydrated and bring lip balm. Average temperatures in June range from the mid-70s Fahrenheit (24 C) to the mid-40s (7 C) in the evening.

Meal information:

The meals provided to attendees are listed in the program. For all other meals you are invited to make use of the many excellent restaurants and eateries in the nearby area. The hotels also offer shuttles into town for dining and tourism.

Press info:

Registered and credentialed media members are also welcome to use the Oslo Room (Greenroom) for access to computers, phones, and refreshments and/or to conduct interviews. Photography from the 2018 World Salt Symposium is available online here:

<https://estabrookphotography.smugmug.com/2018-World-Salt-Symposium/n-vZMTsF>

Credit: Estabrook Photography

Media Contact
Jorge Amselle
Director of Communications
Salt Institute
Cell: 703-896-0131
jorge@saltinstitute.org

Help desk:

A help and information desk will be available at the Stein Lodge during the duration of the World Salt Symposium to answer your questions and offer directions and assistance. The help desk will also serve as our lost and found for misplaced items.

Rules on smoking and mobile devices:

There are strict rules on smoking in the area. Please restrict all smoking activities to outdoor areas and maintain a comfortable distance from entry and exit ways.

Please place your mobile devices on silent mode during any panel sessions and discussions. If you must make or receive phone calls, please do so outside the sessions and far enough away as to not disturb the session speakers and attendees.

Lost and found:

The lost and found will be located at the Help Desk in the Stein Lodge. If you find any misplaced item or are missing an item, please visit us at the Help Desk.

Emergency services:

In case of any medical or other emergency please dial 911 on any available phone. Otherwise please contact hotel or event staff immediately.

Electricity:

Electric power in the United States is set at 110 Volts for most common uses and personal items. Large appliances will use 220 Volts. The standard electrical outlet has two flat blades and occasionally a third grounding pin. If you are using an adapter, make sure that it adjusts your electronics to fit the US plug and converts the voltage.

Currency:

The standard currency in the United States is the U.S. Dollar. It can be difficult to find places to convert foreign currency to US currency. Even many banks require advance notice. There is a currency exchange service at the Salt Lake City Airport. Also, most all retailers and restaurants will accept credit card payment even for very small amounts.

Tour information:

Park City, Utah, features many wonderful outdoor activities, from the Olympic Center, to fishing, hiking, golfing, rafting, biking and horseback riding. There are many possible activities in and around Park City for your enjoyment. Guests will need to schedule any activities directly with the tour providers. A complete list of recommended activities with weblinks is available on our website, www.worldsaltsymposium.org

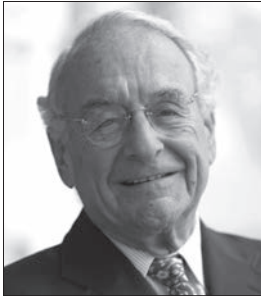
Event Photography:

Attendees are welcome to take their own photos of the event. A professional photographer and videographer will also be onsite and will continuously upload event photos online. By registering and attending the World Salt Symposium you consent to being photographed and/or filmed during this event. You also consent to your image being used in promotional materials for this event. All the photographs will be made available for free to view, share or download at the following web link:

<https://estabrookphotography.smugmug.com/2018-World-Salt-Symposium/n-vZMTsF>

Keynote Speakers

HEALTH:



Dr. Michael H. Alderman, MD

Albert Einstein College of Medicine

**Distinguished University Professor Emeritus,
Department of Epidemiology & Population Health**

**Distinguished University Professor Emeritus,
Department of Medicine (General Internal Medicine)**

A specialist in hypertension, Dr. Michael Alderman is widely recognized for having questioned public health initiatives to lower the recommended level of dietary salt. His research has focused on understanding the wide variety of cardiovascular outcomes among patients with high blood pressure. He has been featured by The New York Times, the Associated Press and The Wall Street Journal.

Dr. Alderman has led pioneering studies on the role of the renin-angiotensin aldosterone system (a hormonal system that regulates blood pressure and fluid electrolyte balance) in cardiovascular disease. In 1973, he established the Worksite program for hypertensive care, a model for effective care and the largest ongoing treatment program of its kind.

Dr. Alderman has authored more than 270 scientific papers, book chapters and textbooks. He is editor of the American Journal of Hypertension, a fellow of the American College of Physicians, a member of the Association of American Physicians, and a past president of both the American Society of Hypertension and the International Society of Hypertension.

Dr. Alderman, who received his B.A. magna cum laude from Harvard College in 1958 and an M.D. from the Yale Medical School in 1962, did postgraduate training at the Johns Hopkins School of Public Health while serving in the United States Public Health Service from 1964 to 1966. He was the Glorney Raisbeck Research Fellow of the New York Academy of Medicine from 1967 to 1968, and in 1973 and 1977 received Travelling Fellowships from the World Health Organization.



Professor Jan A. Staessen, MD, PhD

University of Leuven

Dr. Staessen is Emeritus Professor of Medicine at the University of Leuven and former Head of the Clinic at the University Hospitals Leuven. He leads the Research Unit Hypertension and Cardiovascular Epidemiology, KU Leuven Department of Cardiovascular Diseases, University of Leuven, Belgium. In addition, Dr Staessen is Emeritus Professor of Genetic Epidemiology at the Department of Epidemiology, Maastricht University, Maastricht, Netherlands and Scientific Officer of the R&D Group VitaK at Maastricht University.

Dr Staessen serves on the editorial board of several top-ranking medical journals. He is an Associate Editor of Hypertension, Hypertension Research, and Blood Pressure Monitoring. He serves on the Editorial Board of the American Journal of Hypertension, the Journal of Clinical Hypertension, the official journal of the American Society of Hypertension, the Journal of Cardiology, the official journal of the Japanese College of Cardiology, and Arterial Hypertension, the journal of the Polish Society of Hypertension. He is advisor to The Lancet.



Dr. Andrew Mente PhD, MA

McMaster University

Principal Investigator, Population Health Program, Population Health Research Institute

Associate Professor, Department of Clinical Epidemiology & Biostatistics

Dr. Mente is a Principal Investigator for the Epidemiology program at the Population Health Research Institute. He received his doctoral degree in Epidemiology from the University of Toronto. He completed post-doctoral training in cardiovascular epidemiology at McMaster University, and is currently an Assistant Professor in Clinical Epidemiology and Biostatistics at McMaster University. Dr. Mente has received a Research Fellowship from the Heart and Stroke Foundation of Canada, and a Research Early Career Award from Hamilton Health Sciences.

Dr. Mente has studied the role of dietary sodium and cardiovascular diseases. His team conducted the largest ever epidemiologic study of the impact of sodium intake on blood pressure, cardiovascular disease risk, and mortality in the Prospective Urban Rural Epidemiology (PURE) study, a study of over 100,000 individuals from 18 low-, middle- and high-income countries on five continents. Recently, Dr. Mente has co-led work on the role of fats and carbohydrates in cardiovascular disease in the PURE cohort. He also has conducted numerous large systematic reviews of diet and cardiovascular disease including the impact of saturated fat.



David A. McCarron, MD, FACP, FAHA

Research Associate, University of California, Davis

Department of Nutrition

Dr. McCarron is an Adjunct Professor/Research Associate in the Department of Nutrition, University of California–Davis and former Head of the Nephrology Division at Oregon Health & Science University. He has directed the public/private initiative, Shaping America’s Youth, addressing childhood inactivity and excess weight in partnership with the Office of the US Surgeon General and the American Academy of Pediatrics. An internationally recognized authority on the role of dietary nutrients in cardiovascular disease, his research originally identified the effect of the dietary pattern, now called the DASH diet, on high blood pressure, documented the amelioration of salt sensitivity when mineral intake was increased, reported the first observation that increasing dairy calcium intake was associated with lower BMI and defined the normal range of human sodium intake.

Dr. McCarron received the International Award for Modern Nutrition 2004. He is a Fellow in the American College of Physicians and the AHA Council for High Blood Pressure Research and is a founding member of the Board of the American Society of Hypertension. He is an elected member of the American Society for Clinical Investigation and the American Physiological Society. Dr. McCarron is the Chair of the Medical Nutrition Council of the American Society of Nutrition and a member of its Board of Directors. He has been featured in and contributed to national media including The New York Times, The Wall Street Journal, Washington Post, CNN, CBS, BBC, PBS and NPR.

Dr. McCarron received his undergraduate degree cum laude in chemistry with highest honors from Williams College and medical degree from the University of Pennsylvania. He completed his Internal Medicine training at Case Western Reserve–University Hospitals and Nephrology at Tufts–New England Medical Center where he also served as Chief–Resident in Medicine.



Stan D. Soderstrom

Executive Director

Kiwanis International

Stan D. Soderstrom is the executive director for Kiwanis International, a worldwide service organization in more than 80 nations, and the Kiwanis Children’s Fund. His background includes global and community-based work in the public and private sectors. Stan joined the staff of Kiwanis International in 1997. He has held several positions within the organization and is also an active club member, giving him a unique, guiding perspective. He operates with a belief: “True leaders don’t create followers...they create more leaders...no matter the age.”

One of Stan’s priorities is to develop fresher, more personalized models to attract and shape the next generation of Kiwanians. Stan served as chief impact officer, which focused on the worldwide growth and development of the Kiwanis’ youth and adult leadership programs. He led development of new membership-based service clubs for people who live with disabilities and has been responsible for strategic planning and board governance for Kiwanis International and its two youth organizations, Key Club International and Circle K International. Stan also serves as board member for the Iodine Global Network.

ENVIRONMENT:



Bret Hodne

Director of Public Services

City of West Des Moines

Bret Hodne manages the Public Services Department including coordinating overall work effort, supervising subordinates, evaluating personnel needs such as training, recruitment, etc.; develops, recommends and continually analyzes the yearly departmental budget; manages and recommends Public Services programs, including establishing priorities, reviewing efficiency, analyzing new equipment and technology; prepares agenda items for City Council meetings; makes recommendations to Council and attends all Council meetings as required; coordinates problem-solving and goal achievement with other departments, outside jurisdictions and agencies; interprets codes, ordinances, specifications, policies and professional engineering services for citizens, contractors, other departments, boards and commissions; negotiates contracts and agreements for the Public Services Department; supervises the department's writing of ordinances, contracts, resolutions, and agreements.



Pauli Undesser

Executive Director

Water Quality Association

Pauli Undesser brings a vast knowledge of water treatment technologies, standards, codes and regulations, along with high-level project management skills, to her role at Water Quality Association (WQA). Prior to accepting the role of WQA Executive Director, she served as WQA's Director of Regulatory and Technical Affairs and Water Quality Research Foundation Executive Director. Under Pauli's leadership, WQA successfully coordinated a coalition to re-write and simplify industry product certification laws in California, launched an unprecedented capital campaign for its foundation and developed an internal toxicology program. Pauli holds a bachelor's degree in Chemistry from the University of Illinois at Urbana-Champaign, a master's degree in Biochemistry from Northern Illinois University, and is also a Certified Association Executive (CAE).



Tina Greenfield

Road Weather Information Systems (RWIS) Coordinator

Iowa Department of Transportation

Tina Greenfield oversees the installation and maintenance of the Iowa DOT's RWIS weather stations, conducts road weather training for the DOT's winter maintenance personnel, and analyzes the Department's salt use and winter operations performance and processes. Tina is the current chair of the Transportation Research Board's Winter Maintenance Committee

and represents her agency for the Aurora pooled fund research consortium. She graduated from Iowa State University with a Master's Degree in meteorology before joining the Iowa DOT in 2004.



Max Perchanok

Research Coordinator

Ontario Ministry of Transportation

Max Perchanok leads Ontario's Maintenance Technology Project. Mr. Perchanok developed and led research partnerships for continuous improvement of performance-based contract specifications that support a sustainable, privately delivered winter maintenance program on provincial highways. The scope included innovative policies, processes, technologies, materials and information products used in highway maintenance.

Conference Agenda

Program Note: The program gives the name of the presenter of each paper – the authors can be found by reviewing the appropriate document on the thumb drive or on the website

HEALTH (A Sessions)

ENVIRONMENT (B Sessions)

PRODUCTION (C Sessions)

Tuesday, June 19, 2018

Stein Eriksen Lodge

10:30 AM-12:00 PM

OPENING BRUNCH

GENERAL

Stein Eriksen – Mountain Lodge

12:15 – 12:45

OPENING SESSION

GENERAL

Stein Eriksen Ballroom

1:00 – 2:15

Technical Session 1A: Salt and Cardiovascular Health

HEALTH

Olympic Gold Room

Session Chair: William Wang, North America Business Director, Shinhwa Co., Ltd.

Keynote: Andrew Mente, McMaster University, "Dietary Sodium Consumption and Cardiovascular Disease and Mortality: What is the Current Evidence?"

- Kouichi Tamura, Yokohama City University, "Novel Receptor Binding Protein ATRAP in the Regulation of Renal Sodium Reabsorption and Blood Pressure Response"
- Mort Satin, Salt Institute, "Low Salt Diets and Asymptomatic Hyponatremia"

1:00 – 2:15

Technical Session 1B: Salt and Winter Maintenance

ENVIRONMENT

Olympic Bronze Room

Session Chair: Ken Howe, Cargill Salt

Keynote: Bret Hodne, Director of Public Services, City of West Des Moines, "Salt in the World of Transportation – Keys to Success for the Future"

- S. Jiang, Akzo Nobel, "Biodegradable and Cyanide-free Anticaking Agent for De-icing Salt"
- Jan Olek, Purdue University and Compass Minerals, "Influence of Type of Deicers on Scaling Resistance of Plain and Fly Ash Concretes"
- R. Mark DeVries, Vaisala, "Using Technology to Manage Winter Operations"

1:00 – 2:15

Technical Session 1C: Salt Extraction

PRODUCTION

Stein Eriksen Ballroom

Session Chair: Kevin Thimmesch, Eureka Resources LLC

- Yuhang Fu, Zigong Light Industry Design & Research Institute Co., Ltd., "Exploration on the Technology of Barium Extraction from Yellow Brine and Rock Brine Exchange"
- John Voigt, Solution Mining Research Institute, "Solution Mining and Salt Cavern Challenges, SMRT's Research Focus"
- Kerstin Hirsch, SEP Salt and Evaporation Plants Ltd, "Case Study on the Recovery of Salt from Produced Water coming from Shale Gas Facilities"
- Jerel Bogdan, Eureka Resources LLC, "Extraction of Sodium Chloride and Calcium Chloride from Oil and Gas Wastewater"
- Jun Xiang, Tianjin University of Science & Technology, "Study on Membrane Absorption Performance of Bromine and Water Mixture Solution"

Tuesday, June 19, 2018

2:30 – 3:45

Technical Session 2A: Salt and Iodine 1

HEALTH

Olympic Gold Room

Session Chair: Christian Herrmann, Morton Salt

Keynote: Stan D. Soderstrom, Executive Director for Kiwanis International and Kiwanis Children's Fund, "Kiwanis and IDD: A Story about Universal Salt Iodization"

Sponsored by Kiwanis International



Kiwanis

- Yuxiang Tong, Jiangsu Province Salt Industry Group Co., Ltd., "Iodized Salt and IDD Prevention and Control"
- Noor A. Khan, Nutrition International, "Universal Salt Iodization in Pakistan – A Public Health Success Story"
- Scott Koefod, Cargill, "Photochemical Stabilization of Fortified Salt to Treat Lymphatic Filariasis and Iodine Deficiency"

2:30 – 3:45

Technical Session 2B: Winter Maintenance and the Public Good

ENVIRONMENT

Olympic Bronze Room

Session Chair: Ton Pichel, Akzo Nobel

Keynote: Max Perchanok, Ontario Ministry of Transportation, "Winter Maintenance and the Public Good"

- Todd Kruse, "Snowfighter Appreciation Days"
- Wilf Nixon, Salt Institute, "Economic Benefits of Winter Maintenance"

2:30 – 3:45

Technical Session 2C: Mining Geology 1

PRODUCTION

Stein Eriksen Ballroom

Session Chair: Kevin Brett, Ilanga Sel

- Na Tang, Tianjin University of Science & Technology, "Design and Simulation of Gas Storage Caverns from Underground Rock Salt Solution Mining"
- Pierre Berest, Ecole Polytechnique, "Thermodynamics of Gas Storage Caverns"
- Patrick Laracy, Vulcan Minerals, "A New Salt Mine Development in Eastern Canada at the Feasibility Stage"
- Thomas Schicht, K-UTEC Salt Technologies, "Seismic Monitoring of Former Potash Mines in the South-Hercynian Mountains – Development of Technology and Activity"

4:00 – 5:15

Technical Session 3A: Salt and Health Outcomes

HEALTH

Olympic Gold Room

Session Chair: Ismail Suttar, HubSalt

Keynote: Michael Alderman, Albert Einstein College of Medicine, "Dietary Sodium and Health – What is known, and not known"

- Saoraya Chunmuang, Mokpo National University, Republic of Korea, "Effects of Mineral-Rich Solar Sea Salt and Its Heat-Treated Salt on Blood Pressure and Endothelial Dysfunction in Dahl Salt-Sensitive Rats"
- Janice Johnson, Cargill Salt, "Review of the Science on Sodium and Health Outcomes"

Tuesday, June 19, 2018

4:00 – 5:15

Technical Session 3B: Winter Maintenance and New Technology

ENVIRONMENT

Olympic Bronze Room

Session Chair: Jon Schnieders, Compass Minerals

Keynote: Tina Greenfield, Iowa Department of Transportation, "The Role of Big Data in Winter Maintenance"

- Scott Koefod, Cargill, "Investigating Pre-Wetting with a New Ice Melter Performance Test"
- Steffen Ball, Compass Minerals, "Newly Developed Anti-Caking Agents and Physical Influences on Caking"
- Wilf Nixon, Salt Institute, "Safe and Sustainable Snowfighting"

4:00 – 5:15

Technical Session 3C: Mining and Production Technology 1

PRODUCTION

Stein Eriksen Ballroom

Session Chair: Wouter Lox, EU salt

- Deqiang Zhang, Tianjin Changlu Haijing Group Co., Ltd., "Design of Moderate Brine Supply System and the Online Control of Bromine Extraction: the Case of a 2000 t/a Bromine Manufacture Pilot in Northern China"
- Na Tang, China National Salt Industry Corporation, "Recycled Salt Precipitation Rules of Yabulai Salt Lake Brine"
- Xu Junhui, China Salt Jintan Co. Ltd., "Study on Wet FGD Process in Thermal Power Plant Using Salt Slurry From Brine Purification"
- Toby Cressman, Joy Global, "Utilizing Mechanized Mining for Salt Extraction"
- Vladimir M. Sedivy, Salt Partners Ltd., "Upgradeability of Solar, Rock and Vacuum Evaporated Salts"

6:00-8:30 PM

OPENING RECEPTION

GENERAL

The Montage Deer Valley

Shuttle buses will be located at the corner of Stein Way and Royal Street, between the Stein and Chateaux.

Shuttle buses will run continuously from 5:30 PM to 9:00 PM.

Please do not attempt to walk as there is no sidewalk and no lighting.

This reception will feature stations highlighting regional cuisines of the United States. Throughout the Montage you will find the following regions represented: West Coast, Midwest, The South, and Hawaii.

Wednesday, June 20, 2018

Stein Eriksen Lodge

9:00 – 10:15

Technical Session 4A: Salt and Iodine 2

HEALTH

Olympic Gold Room

Session Chair: Jonathan Gorstein, Iodine Global Network

- Roland Kupka, UNICEF, "Global Experience with USI – Success and Achievements Towards the Elimination of IDD"
- Luiz Caetano, Sal Cisne "Public-Private Collaboration on USI: Examples of Recent Success and Some Suggestions for the Future"
- Noor Khan, Nutrition Initiative, "Recent Efforts Towards Consolidation of the Salt Industry to Support USI"
- Katia Dias, GAIN, "Critical Issues in the Implementation of Iodized Salt Production–Regulatory Monitoring and KIO₃ Supply"

9:00 – 10:15

Technical Session 4B: The Story of Salt

ENVIRONMENT

Olympic Bronze Room

Session Chair: Jim Wirth, Ferrum

- David Bloch, M. R. Bloch Salt Archive, "Revealing the Original Purpose Engineered Qanat Karez Falaj Salt Leaching System Compared to the Sabkha Salt Leaching and Recovery Today"
- Yuxiang Tong, Jiangsu Province Salt Industry Group Co., Ltd., "Snow-white Wu Salt – The Emergence and Influence of the Circle of The Huai Salt Culture"
- William M. Goodman, Sovereign Hydro, "A Late-Stage Wild-Brining Operation Using Salt-Contact Brine at the Up-Dip Terminus of Halite Beds in the Silurian Salina Group, Northern Rim of the Appalachian Basin"
- Sergio Moreno, Asociación Mexicana de la Industria Salinera A.C., "Influence of Technological Revolutions on Salt Production"

9:00 – 10:15

Technical Session 4C: Salt Production and Purification Issues

PRODUCTION

Stein Eriksen Ballroom

Session Chair: Dan Pannell, Compass Minerals

- Franz Goetzfried, Salt Research and Consulting; Evatherm AG, "Technologies to Produce Pharmaceutical Grade Sodium Chloride"
- Matthew Bollinger, Cargill, "Producing Naturally Purified Salts from Mixed Salts"
- Koji Masaoka, Research Institute of Salt and Sea Water Science, "The Salt Industry Center of Japan, Incorporation Phenomena of Impurity Ions into Sodium Chloride Crystals"
- Markus Pfänder, K-UTEC Salt Technologies, "Potassium Sulfate – A Precious By-Product for Solar Salt Works"

10:30 – 11:45

Technical Session 5A: Salt and Iodine 3

HEALTH

Olympic Gold Room

Session Chair: Roland Kupka, UNICEF

- Robin Houston, IGN, "Use of Iodized Salt in Processed Foods – Steps Required to Include Processed Foods in National USI Programs"
- Jonathan Gorstein, IGN, "Using Salt as Vehicle of Other Micronutrients"
- Brief panel discussion for question and answer session

Wednesday, June 20, 2018

10:30 – 11:45	Technical Session 5B: Leading Safety from the Corner Office <i>Olympic Bronze Room</i> Session Chair: Emanuel Manos, Detroit Salt Panel Discussion <ul style="list-style-type: none"> • Marcelo Montero, Cargill • Anthony Sepich, Compass Minerals • Jen Schipper, Morton Salt • Wilf Nixon, Salt Institute (panel facilitator) 	ENVIRONMENT
10:30 – 11:45	Technical Session 5C: Mining Geology 2 <i>Stein Eriksen Ballroom</i> Session Chair: Wes Vietmeier, Sandvik <ul style="list-style-type: none"> • Dirk Zapf, Leibniz University Hanover, "Thermally Induced Cracks in Gas Caverns in Rock Salt" • Giorgia Bettin, Sandia National Labs, "Depressurization Effects in Salt Dome Caverns" • Barry Roberts, Sandia National Labs, "A System for Salt Cavern Well Integrity Grading" • Pierre Berest, Ecole Polytechnique, "Crater Formation above Salt Caverns: Piston vs. Hour Glass" • Tapas Chatterjee, SSP PVT Ltd., "Salt Processing Technologies" 	PRODUCTION
11:45 AM-1:00 PM	LUNCH <i>Stein Eriksen—Mountain Lodge</i>	GENERAL
1:00 – 2:15	Technical Session 6A: Moving Forward with Salt and Health <i>Olympic Gold Room</i> Session Chair: Mort Satin, Salt Institute Keynote: David McCarron, University of California – Davis, "Anything Worth Doing Takes More Than A Lifetime: The Resolution of The Sodium and Health Debate" Panel Discussion: "The need for large randomized controlled trials on the impact of salt on health outcomes" <ul style="list-style-type: none"> • Andrew Mente, McMaster University • David McCarron, University of California • Michael Alderman, Albert Einstein College of Medicine • Jan A. Staessen, University of Leuven 	HEALTH
1:00 – 2:15	Technical Session 6B: Salt and The Circular Economy—Improving the Manufacturing Process <i>Olympic Bronze Room</i> Session Chair: Nils Vanderplas, Akzo Nobel <ul style="list-style-type: none"> • Wouter Lox, EUsalt, "Circular Economy, a Business Opportunity for the Salt Industry?" • Torsten Slotosch, UGS GmbH, "Surface Engineering Department and K + S, Mutual Benefits of Combining Potash Production and Abandonment of Underground Storage Facilities" • Denis Vidovic, K + S, "CO₂ Footprint: Comparison Between Rock Salt, Sea Salt and Vacuum-evaporated Salt" • S. Jiang, Akzo Nobel, "Next Generation Anticaking Agent for Edible Salt" • Yuhang Fu, Zigong Light Industry Design & Research Institute Co., Ltd., "Study on Comprehensive Utilization of Residues in Salt Making Area" 	ENVIRONMENT

Wednesday, June 20, 2018

1:00 – 2:15	Technical Session 6C: Salt Production Trends <i>Stein Eriksen Ballroom</i> Session Chair: Joe Krauss, Hogan Lovells <ul style="list-style-type: none"> • Kerry Satterthwaite, Roskill, "International Salt Trends to 2020" • Kerstin Hirsch, SEP Salt and Evaporation Plants Ltd., "A General Overview of Chemical Brine Treatment for Salt Production Processes" • Dr. Stefan Schlag, HIS Markit, "The Global Salt Market" • Vladimir M. Sedivy, Salt Partners Ltd., "Salt Business in Africa" 	PRODUCTION
2:30 – 3:45	Technical Session 7A: Issues of Salt Intake <i>Olympic Gold Room</i> Session Chair: Marcelo Montero, Cargill Keynote: Jan Staessen, University of Leuven Belgium, "Reducing Salt Intake for Prevention of Cardiovascular Disease—Times Are Changing" <ul style="list-style-type: none"> • Janice Johnson, Cargill Salt, "Challenges of Removing Salt as a Sodium Reduction Solution for Foods" • John MacKinnon, K+S Business Unit Salt, "Salt with Differentiated Adhesion Promoters for Topical Snack Applications" 	HEALTH
2:30 – 3:45	Technical Session 7B: Salt and Water Conditioning <i>Olympic Bronze Room</i> Session Chair: Ben Nichols, Compass Minerals Keynote: Pauli Undesser, Water Quality Association, "Water Quality Perspectives and Impacts for Salt" <ul style="list-style-type: none"> • Robert Geiger, Compass Minerals, "Enhancing the Efficiency of Water Softener Regenerants" • Lori Roman, Salt Institute, "Water Conditioning – The State of the Art and of the Politics" • Mao Qingguo, China Salt Association, "Changes in the Salt Industry in China" 	ENVIRONMENT
2:30 – 3:45	Technical Session 7C: Solar Salt 1 <i>Stein Eriksen Ballroom</i> Session Chair: Geordie Edmiston, McLanahan <ul style="list-style-type: none"> • Matthew S. Hickenlooper, REDD Engineering & Construction, Inc., "Identifying and Analyzing Opportunities for Expansion and Optimization in Solar Salt Works" • Joseph D. Lwanyaga, Makerere University, Uganda, "Thermodynamic Modelling of Lake Katwe Brine for Industrial Salt Extraction" • Nikolaos A. Korovessis, Hellenic Saltworks S.A., "The Role of Protozoan Fabrea Salina In Solar Sea Salt Production" • Nikolaos A. Korovessis, Technical Education Institute of Western Greece, "Protists, Cyanobacteria, Rotifers and Crustacea from the Hypersaline Lakes of Messologhi Saltworks" 	PRODUCTION

Wednesday, June 20, 2018

4:00 – 5:15

TECHNICAL SESSION 8: POSTER SESSION

GENERAL

The Chateaux – Impressionist Ballroom

Featuring Ice Cream Social, Games, and Prizes

The poster session provides an opportunity for paper authors to interact more intimately with other symposium delegates, and to discuss their findings in more detail. It also provides an opportunity for the more speculative and current findings of the field to be presented. Several international salt associations will also be presenting posters.

Session Chair: Wouter Lox, EUsalt

- Naihong Xin, China National Salt Industry Corporation, "Increase of Output of Saltworks Related to Salt Lake Through Algae *Dunaliella Salina* Culture in West-Northern China"
- Bu Ming, China Salt Yulin Co. Ltd., "Comparison and Suggestion with ME and MVR Salt Production Process"
- Yuka Nakayama, Research Institute of Salt and Sea Water Science, The Salt Industry Center of Japan, "Consideration of Bacteria Inspection Methods Used to Examine Salt and Manufacturing Process Samples"
- Hayato Mineo, Research Institute of Salt and Sea Water Science, The Salt Industry Center of Japan, "Thermal Decomposition of Japanese Sea Salt Using TG-MS"
- Takeshi Nagatani, Research Institute of Salt and Sea Water Science, The Salt Industry Center of Japan, "Development of Ion-Exchange Membrane Using an Electron-Beam-Induced Graft Polymerization Method"
- Penggao Cheng, Tianjin University of Science & Technology, "The Calcium Sulfate Scale Formation and Removal During Salt Manufacture: A Case Study from Lab Test to Pilot Scale Experiment"
- L. Ninane, Consultant, "Two Models of Industrial Oslo Crystalliser"
- Bu Ming, China Salt Yulin Co. Ltd., "Research on Utilization of the Geothermal Energy Carried by Rock Salt Brine in Deep Well"
- Evert Altena, Akzo Nobel, "Process for the Preparation of the Low Sodium Salt Suprasel OneGrain"
- L. Ninane, Consultant, "Vacuum Salt Fluid Bed Drying and Cooling"
- Urs Hofmeier, Swiss Salt Works, "Influence of Selected Salt Qualities and Carrier Systems on Saltiness Perception in Bread Rolls"
- Yoshinari Wada, Faculty of Engineering, Chiba Institute of Technology, "Effective Utilization of Bromine in Seawater: Application to Water Purification Technique with Supplying Ozone Minute-Bubbles"
- Charlotte Booth, Bangor University, "Comparison of Theoretical and Measured Composition of Brine During Salt Precipitation and Resulting Co-Crystals"
- Fuminori Misaizu, Tohoku University, "Geometrical Structures and Molecular Adsorption Reactions of Alkali-Halide Cluster Ions Investigated by Ion Mobility-Mass Spectrometry"
- Hargovind Patel, Seaweed Fertilizer Company, "An Improved Horizontal Screw Classifier/Washery"
- Thomas Schicht, K-UTEC Salt Technologies, "Exploration of Different Types of Potash Deposits: Case Studies"

This listing represents the posters available to us when the program went to press. Additional posters may have been added since – please see the listing of posters at the entrance to the poster session.

6:30-9:30 PM

COUNTRY-WESTERN RECEPTION

GENERAL

(Western wear encouraged, but not required)

Stein Eriksen – Mountain Lodge

Featuring Line Dancing, Live Music, Western Fare, Prizes and Mechanical Bull Riding.

Thursday, June 21, 2018

Stein Eriksen Lodge

8:30 – 9:45

Technical Session 9A: Getting the Media and the Public to Embrace the Science of Salt

HEALTH

Olympic Gold Room

Session Chairs: Tom von Zeeburg and S. Jiang, Akzo Nobel

- Julie Gunlock, Independent Women's Forum, "Health and the Culture of Alarmism"
- Mort Satin, Salt Institute, "Salt—The Greatest Myth in the History of Modern Medicine"
- Alex Morrison, Grey Advertising West, "Advancing the Message: Salt in the Media"

8:30 – 9:45

Technical Session 9B: Safety and the Team

ENVIRONMENT

Olympic Bronze Room

Session Chair: Geoff Brown, Compass Minerals

- James Jacquez, Morton Salt, "Health and Safety Maturity Assessment"
- Scott Whitelaw, United Salt, "Building Responsibility in the Workplace"

8:30 – 9:45

Technical Session 9C: Solar Salt 2

PRODUCTION

Stein Eriksen Ballroom

Session Chair: Matthias Mohr, K+S Chile

- L. Ninane, Consultant, "Design of Industrial Oslo Crystalliser: A Case Study"
- Kiyomi Nakajima, Salt Industry Center of Japan, "Effect of Composition and Dissolved Oxygen of Mother Liquor on Rest Potential of Metals"
- Na Tang, Tianjin University of Science; Technology, "Glauber Salt Precipitation Rules of Yabulai Salt Lake Brine"
- Kahn Farhan, Department of Chemistry, University of Karachi, "Laboratory Scale Study for the Control Crystallization of Sodium Chloride Pyramid Crystals (Fleur De Sel) Prepared by Solar Salt"
- Liying Sui, Tianjin University of Science and Technology, "Current Situation of Artemia Resources in Bohai Bay Solar Saltworks, China"

10:00 – 11:15

Technical Session 10A: Changing the Conversation about Salt and Health

HEALTH

Olympic Gold Room

Panel Discussion

Session Chair: Jim O'Donnell, United Salt Corporation

- Lori Roman, Salt Institute
- Julie Gunlock, Independent Women's Forum
- Alex Morrison, Grey Advertising West
- Jorge Amselle, Salt Institute

10:00 – 11:15

Technical Session 10B: Safety and Technology

ENVIRONMENT

Olympic Bronze Room

Session Chair: Erich Krug, K+S Salt

- Barbara Menard, Compass Minerals, "Cote Blanche Spray Liner Project"
- James Jacquez, Morton Salt, "Diesel Particulate Matter Reduction Plans"

Thursday, June 21, 2018

10:00 – 11:15

Technical Session 10C: Mining and Production Technology 2

PRODUCTION

Stein Eriksen Ballroom

Session Chair: Todd Kruse, Normandale College

- M. Matsumoto, Nihon University, Japan, "Enhanced $\text{CaMg}(\text{CO}_3)_2$ Production by CO_2 Microbubble Injection into Concentrated Brine"
- Yasushi Noda, Research Institute of Salt and Sea Water Science, The Salt Industry Center of Japan, "Determination of Bromine and Iodine in Salt with Inductively Coupled Plasma – Mass Spectrometry"
- Noa Sainz-Lopez, University of Algarve, "Is All Fleur De Sel the Same? Experience from Artisanal Saltworks in Castro Marim, Portugal"
- Xiaoyu Zhao, Tianjin University of Science and Technology, "Electric Field Associated Selective Extraction of Lithium from Seawater and Brine"
- Guy Wilkins, Solar Salt Harvesters, "Rain Management and Salt Floors in Solar Salt Plants"

11:30 – 12:00

CLOSING SESSION

GENERAL

Stein Eriksen Ballroom

12:15 – 5:45 (return)

SALT PRODUCTION TOURS

GENERAL

Must be pre-registered for bus tour and present badge before boarding.

Box Lunch provided

Buses depart for Salt Tours at the corner of Stein Way and Royal Street (between Stein and Chateaux)

Dress Code:

- No open toed or high heeled shoes (safety toes preferred, but not required)
- No exposed legs (no shorts, skirts, dresses), and no sleeveless shirts
- No exposed necklaces, earrings, watches, rings with stones, or items in pockets above the waist

If you do not meet the dress code, you will not be allowed on the bus due to safety regulations at the site.

NOTE: The climate at The Great Salt Lake is very different than in Park City. It will be both hotter and drier. Please be sure to bring bottled water. A hat and lip balm are also advisable especially if you will be exiting the bus.

SALT INSTITUTE POLICY STATEMENT ON COMPLIANCE WITH ANTITRUST LAWS

Fair and vigorous competition is essential to the maintenance of this country's free enterprise system. In furtherance of this principle, all activities of the Salt Institute are to be conducted in strict compliance with antitrust laws. Staff, officers, directors, members, and committee members are reminded that they are required to comply with the spirit and requirements of the antitrust laws.

A free exchange of ideas on matters of mutual interest to representatives of the Salt Institute members is necessary for the success of all meetings. Such an exchange of views is essential to the successful operation of every trade association. It is not the purpose of this policy to discourage the exploration in depth of any matters of legitimate concern to meeting participants. Nevertheless, to ignore certain antitrust ground rules, either through unfamiliarity or otherwise, is to create a risk business people cannot afford.

The Sherman Antitrust Act, The Clayton Act, the Federal Trade Commission Act, and the Robinson-Patman Act comprise the basic federal antitrust laws in the United States and set forth the broad areas of conduct considered illegal as restraints of trade. In general, agreements or understandings between competitors that operate as an impediment to free and open competition are forbidden. The broad language of these laws suggests the scope of federal antitrust prohibitions by forbidding any "agreement or understanding...to substantially lessen competition or tend to create a monopoly in any line of commerce." In particular, the antitrust laws prohibit:

- Discussing the fixing or regulating of prices, markups, or the conditions or terms for the sale;
- Discussing the establishment of geographic trading areas, allocation of markets or customers, or classification of certain customers as being entitled to preferential treatment;

- Discussing or participating in any plan designed to induce any manufacturer or distributor to sell or refrain from selling, or discriminate in favor of or against any particular customer or class of customers;
- Discussing limiting or restricting the quantity of products to be produced;
- Discussing or participating in any plan designed to control the means of transportation or channels through which products may be sold; and
- Discussing or participating in any plan which has the effect of discriminating against or excluding competitors.

This is, at best, only a general outline of some of the areas, which pose antitrust dangers in discussions between competitors and between sellers and their customers. They are provided to guide discussion during meetings, and in connection with social or other gatherings on those occasions. Meeting attendees should be familiar with the "Antitrust Compliance Guidelines for the Salt Institute." Copies of the Guidelines are available from Salt Institute staff or its General Counsel.

If any question arises about an item on a meeting agenda, it should be reviewed by legal counsel before the meeting. If the question does not arise until the meeting has begun, or if a questionable topic is about to be discussed in connection with any gathering, whether or not a formal meeting, that discussion should be immediately stopped and not resumed until approved by legal counsel.

Exhibitors:

Gold Level

Stein Eriksen Ballroom Foyer

- AkzoNobel
- Cargill
- China National Salt Industry Corporation
- Compass Minerals
- Eastern Salt Company
- K+S / Morton Salt

Silver Level

Stein Eriksen Olympic Ballroom Foyer

- Ferrum
- HubSalt
- Sandvik
- Shinhwa
- United Salt Corporation

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Lori Roman

President
Salt Institute

Wouter Lox

Managing Director
EUsalt

Mao Qingguo

Chairman
China Salt Association

Ismail Suttar

CEO
HubSalt

Salt Institute Board of Directors

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Marcelo Montero

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Compass Minerals

Jim O'Donnell

President & CEO
United Salt Corporation

Christian Herrmann

CEO Morton Salt
CEO Operating Unit Americas, K+ S Group

Mitchell Dascher

President
Kissner Group

Salt Institute Staff

Mort Satin

Vice President, Science and Research

Wilfrid Nixon, Ph.D., P.E.

Vice President, Science and the Environment

Jorge Amselle

Director of Communications

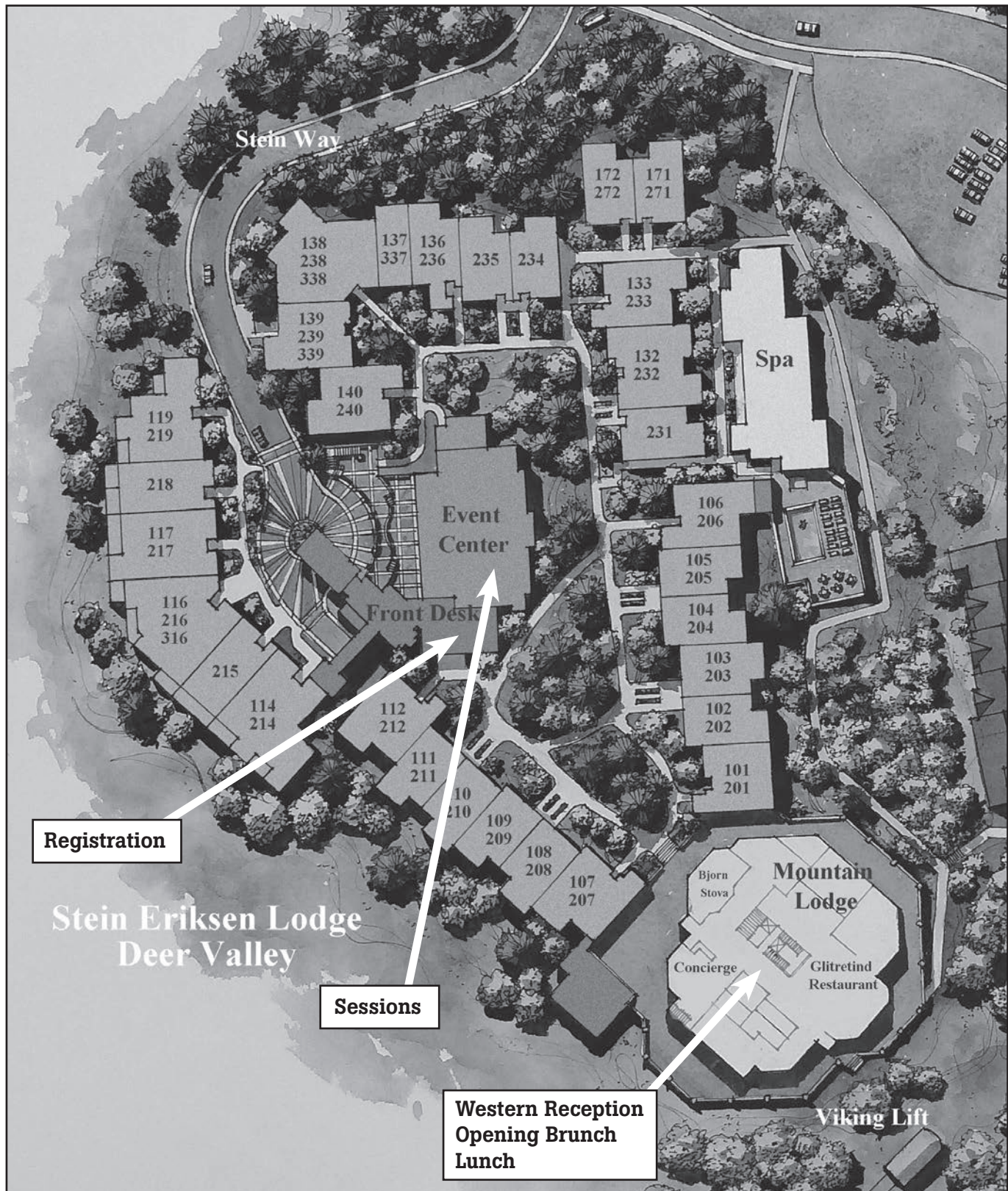
Tammy Goodwin

Administrative Director

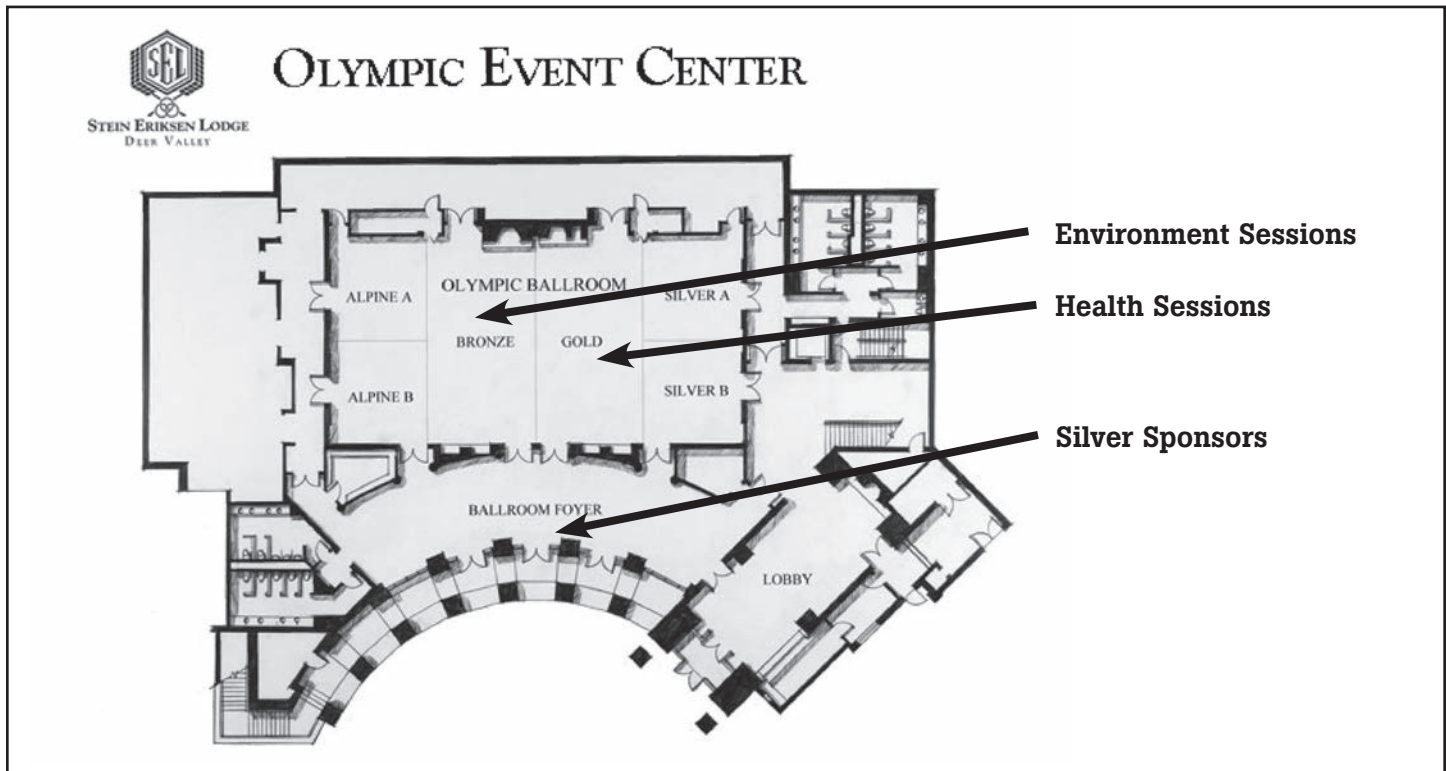
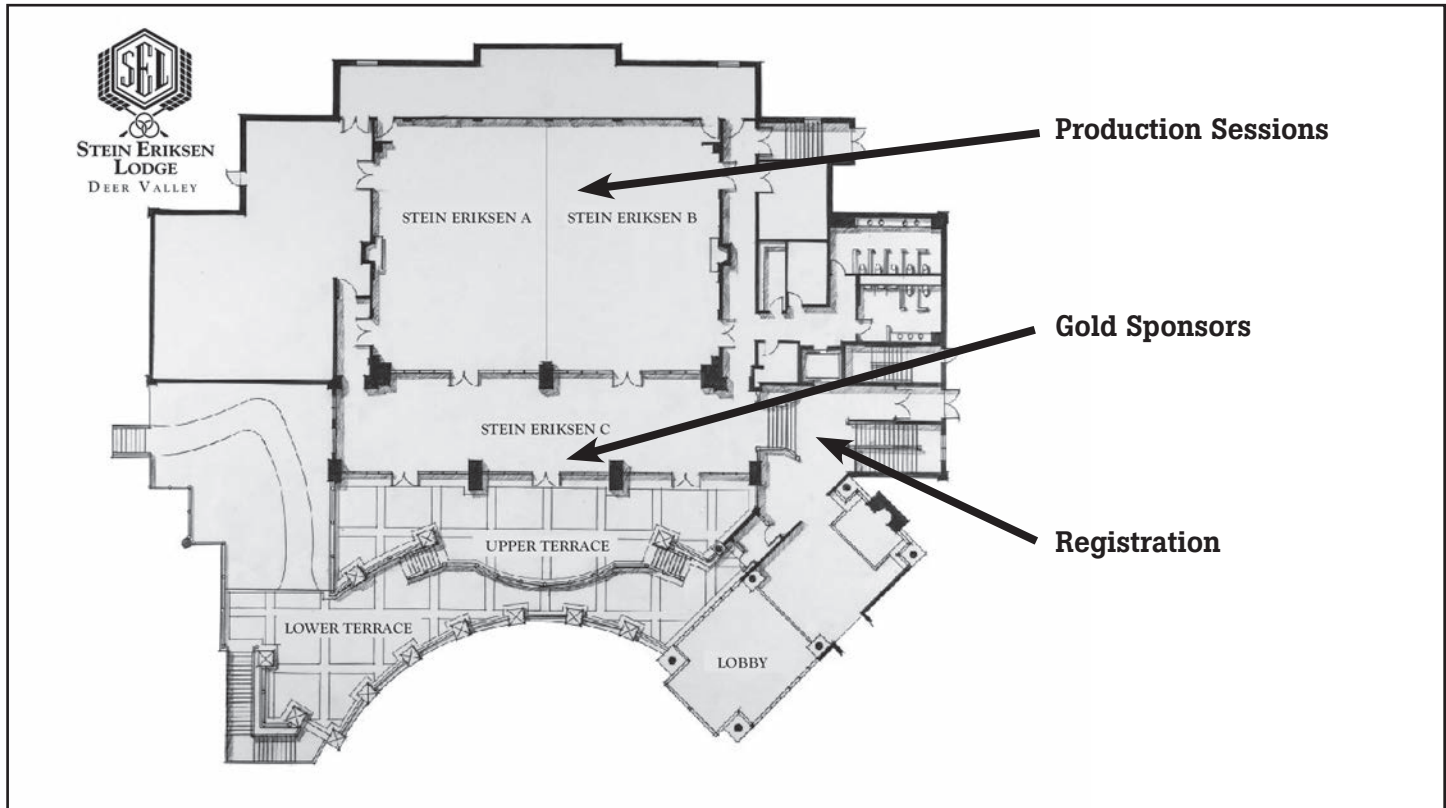
Laura B. Elliott

Director of Special Projects

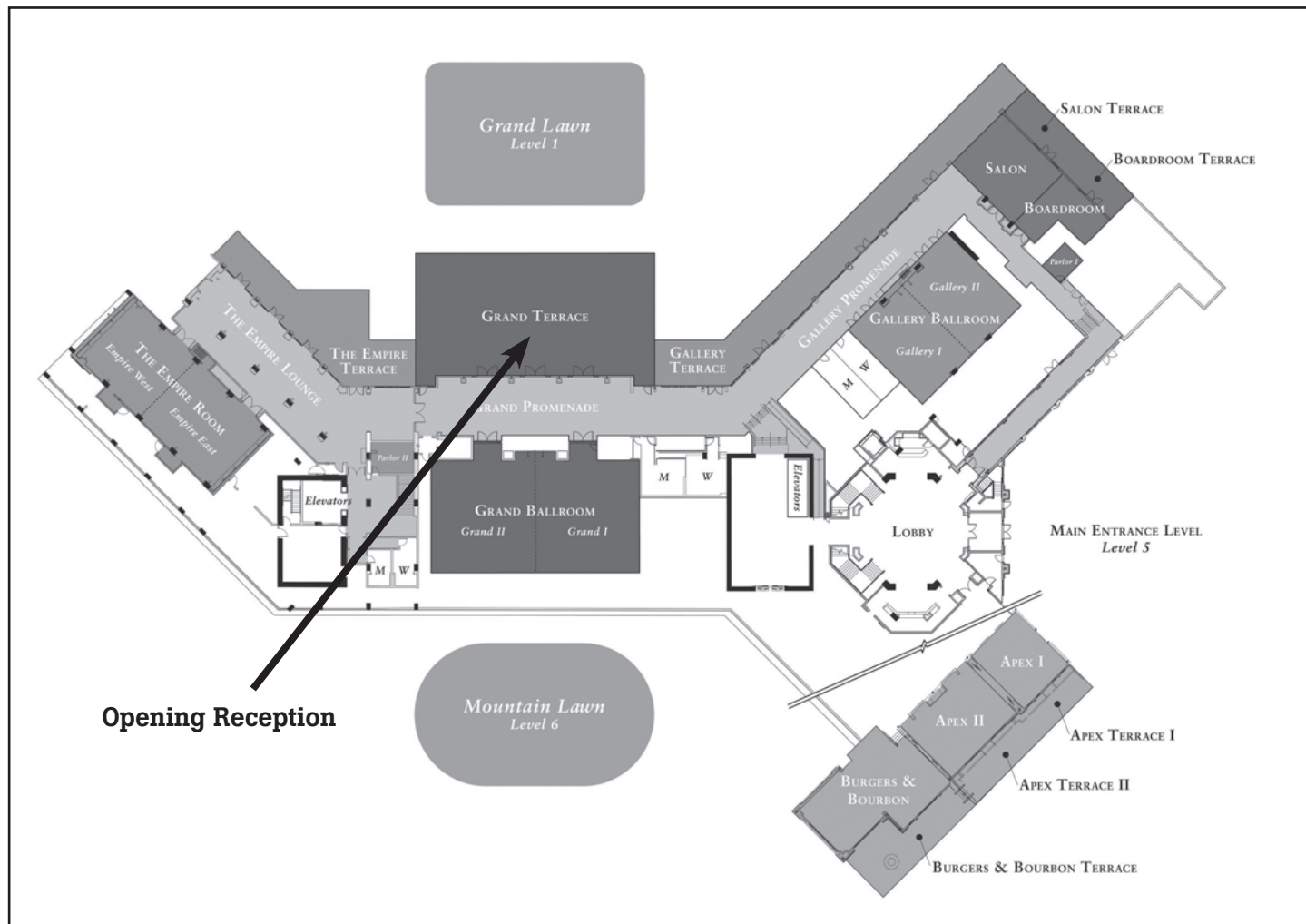
Stein Map



Stein Map



Montage Map



Symposium Registration is located one floor up from the Grand Ballroom in the Vista Lounge (6th floor)

Open Monday from 12:00 PM to 8:00 PM.

Notes

[illegible]

Area Map





WORLD SALT SYMPOSIUM

