

SYMPOSIUM

Environmental Considerations in Energy Production



Pocket Program

**April 14-18, 2013
Charleston Marriott
Charleston, West Virginia**

SME

CONFERENCE CHAIRS:

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SME

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PARTICIPATING INSTITUTIONS AND ORGANIZATIONS

- Appalachian Research Initiative for Environmental Science (ARIES)
- Virginia Tech
- Edward Via College of Osteopathic Medicine
- Marshall University
- Ohio State University
- Pennsylvania State University
- University of Kentucky
- University of Pittsburgh
- West Virginia University
- Alpha Natural Resources
- Arch Coal
- Cliffs Natural Resources
- CSX Corporation
- MEPCO
- Natural Resource Partners
- Norfolk Southern Corporation
- Patriot Coal Corporation
- TECO Coal Corporation



CALENDAR OF EVENTS



SUNDAY, APRIL 14, 2013

Registration	1:00pm – 5:00pm	Grand Foyer
Short Course: <i>How to Communicate Research for Scientists</i>	1:00pm – 4:00pm	Cumberland
Welcome Reception and Poster Session	5:00pm – 6:30pm	Pavillion



MONDAY, APRIL 15, 2013

Registration	7:30am – 5:00pm	Grand Foyer
Author's Coffee	7:30am – 8:30am	Blue Ridge
Speaker Ready Room	7:30am – 3:00pm	Blue Ridge
Opening and Plenary I: <i>Energy Policy, Planning, and Research</i>	8:30am	Salons A-C
Exhibit Coffee Break	10:30am	Salons D-F
Plenary II: <i>Energy Production and the Environment</i>	10:45am	Salons A-C
Luncheon	12:30pm	Salons D-F
Technical Sessions	2:00pm	Salons A-C & Appalachian
Exhibit Coffee Break	3:15pm	Salons D-F
Symposium Reception and Dinner	6:00pm	Pavillion



TUESDAY, APRIL 16, 2013

Registration	7:30am – 5:00pm	Grand Foyer
Author's Coffee	7:30am – 8:00am	Blue Ridge
Speaker Ready Room	7:30am – 3:00pm	Blue Ridge
Technical Sessions	8:00am – Noon	Salons A-C & Appalachian
Exhibit Coffee Break	10:00am	Salons D-F
Luncheon	Noon	Pavillion
Technical Sessions	2:00pm – 3:30pm	Salons A-C & Appalachian
Exhibit Coffee Break	3:30pm	Salons D-F
Technical Sessions	3:45pm – 5:30pm	Salons A-C & Appalachian



WEDNESDAY, APRIL 17, 2013

Registration	8:00am – 10:00am	Grand Foyer
Author's Coffee	7:30am – 8:30am	Blue Ridge
Speaker Ready Room	7:30am – 10:00am	Blue Ridge
Technical Sessions	8:30am	Salons A-C & Appalachian
Coffee Break	10:15am	Salons D-F
Plenary & Closing	10:30am – Noon	Salons A-C
Committee Meetings	1:00pm – 4:00pm	Capitol Board Room & Alleghany

GENERAL INFORMATION

Authors' Coffee

All presenting authors should attend the Authors' Coffee on the day of their presentation.

Location: Blue Ridge

Hours:

Monday, April 15 7:30am – 8:30am
Tuesday, April 16 7:30am – 8:30am
Wednesday, April 17 7:30am – 8:30am

Registration / Membership / Bookstore Proceedings

SME membership applications and information will be available. Best selling industry publications and SME merchandise will also be available for purchase. *Pick up your copy of the Environmental Considerations in Energy Production Proceedings.*

Location: Grand Foyer

Hours:

Sunday, April 14 1:00pm – 5:00pm
Monday, April 15 7:30am – 5:00pm
Tuesday, April 16 7:30am – 5:00pm
Wednesday, April 17 8:00am – 10:00am

Exhibit & Social Events

Location: Salons D-F

SUNDAY

Welcome Reception & Poster Session ... 5:00pm – 6:30pm

MONDAY

Coffee Breaks 10:30am & 3:15pm
Luncheon 12:30pm
Symposium Reception and Dinner 6:00pm

TUESDAY

Coffee Breaks 9:30am & 3:15pm
Luncheon 11:30am

WEDNESDAY

Coffee Break 10:15am

Additional tickets may be purchased at the registration desk.

EXHIBITORS WILL SHOWCASE THEIR PRODUCTS AND SERVICES DURING THE COFFEE BREAKS AND LUNCHEONS.

Speaker Ready Room

Audio-visual representatives will be available to assist authors.

Location: Blue Ridge

Hours:

Monday, April 15 7:30am – 5:00pm
Tuesday, April 16 7:30am – 5:00pm
Wednesday, April 17 7:30am – Noon



POLICIES

Registration Policy: All attendees and authors are required to register. The appropriate badge is required for admittance to all activities.

Student Registration Policy: Student registration for the Conference must meet eligibility requirements. SME requires that an individual must be attending a college/university/ higher education institution on a full-time basis to qualify for student registration rates. SME cannot process student registrations without evidence that you are a full-time student. Students enrolled in 12 or more semester credit hours are considered full-time.

Refund Policy: If circumstances require you to cancel your registration, written notice must be sent to Meetings Dept., SME, 12999 E. Adam Aircraft Circle, Englewood, CO 80112. Postmarked no later than March 25, 2013. A \$100 (US) processing fee will be assessed on all total cancellations and substitutions. No refunds for registration will be issued after the March 25, 2013 deadline.

SHORT COURSE: *How to Communicate Research for Scientists*



Sunday, April 14, 2013
1:00pm - 4:00pm • \$50 • Cumberland Room

Overview

The course would be based on the book *Don't Be Such a Scientist: Talking Substance in an Age of Style* by Randy Olson. Using material from the book and from courses on dealing with the media, as well as exercises and interactive discussions, the course would help researchers, scientists and engineers from academia and industry to learn and practice new ways of thinking and dealing with communicating the results of the work. The goal is to help these professionals better deal with media and the public and provide factual information for public debate on the production of energy and mineral resources.

The course is intended to be a three to four hour session, including one long break. A general outline is as follows:

1. Introduction to communicating science
2. The problem with substance versus style
3. "Don't be such a scientist..."
4. Talking to the public
5. Writing for public consumption
6. Handling a public meeting
7. Dealing with the media



TECHNICAL PROGRAM

MONDAY, APRIL 15, 2013

8:30am

Plenary Panels:

Location: Salons A-C

Chairs: **Michael Karmis**, Virginia Polytech Institute and State Univ., Blacksburg, VA

John Craynon, Virginia Center for Coal and Energy Research, Blacksburg, VA

Invited government and corporate leaders will share their perspectives on the importance of energy and the environment to their states and the nation. The discussions will bring a perspective on the need for good science to inform policies and decisions.

8:30am

Plenary I: Energy Policy, Planning, and Research

Dr. Leonard K. Peters, Secretary, Kentucky Cabinet of Environment and Natural Resources

Randy Huffman, Secretary, West Virginia Dept. of Environmental Protection

Conrad T. Spangler, III, Director, Virginia Dept. of Mines, Minerals and Energy

Dr. Karen R. Obenshain, Director, Fuels, Technology & Commercial Policy, Edison Electric Institute

Dr. Anthony Cugini, Director, National Energy Technology Laboratory (NETL)

10:45am

Plenary II: Energy Production and the Environment

Gene Kitts, Senior Vice President, Environmental and Regulatory Affairs, Alpha Natural Resources

Katharine Fredriksen, Senior Vice-President, Environmental Strategy and Regulatory Affairs, Consol Energy

Carl Michael Smith, Executive Director, Interstate Oil and Gas Compact Commission

Bruce Braine, Vice President, Strategic Policy Analysis, American Electric Power Company Service Corp.

Luncheon

12:30pm • Salons D-F

2:00pm

Watersheds

Location: Appalachian

Chair: **Richard Warner**, Univ. of Kentucky, Lexington, KY

🌿 **Water Quality and Appalachian Mining: Analysis of Watershed-Based Conclusions:** *W.B. Early III*, Sites Harbison; *J.S. Gardner* and *D. Myneer*, ECSI

🌿 **A Value of Information Study Examining the Effectiveness of Spatial Datasets for Modeling Landscape to Water Quality Relationships:** *M.P. Strager*, West Virginia University; *A.E. Maxwell*, Alderson and Broaddus; and *J.T. Petty* and *P. Ziemkiewicz*, West Virginia University

- 🌱 **Water Quality Permitting Under Managed Discharge:** *P.F. Ziemkiewicz*, West Virginia Univ.; and *R.G. McLusky*, Jackson Kelly
- 🌱 **Scenario Analysis and the Watershed Futures Planner: Predicting Future Aquatic Conditions in an Intensively Mined Appalachian Watershed:** *J.T. Petty*, *M.P. Strager*, *E.M. Merriam*, and *P.F. Ziemkiewicz*, West Virginia University
- 🌱 **The Mine Land Stewardship Initiative:** *D. Ledford*, Appalachian Wildlife Foundation

Environmental Consideration in Electrical Generation

Location: Salons A-C

Chair: **Nino Ripepi**, Virginia Tech Blacksburg, VA

- 🌱 **Environmental Issues in Electricity Generation:** *R. Reash*, AEP
- 🌱 **Sargas/Matoon:** *P. Gandola*, Sargas
- 🌱 **Environmental Aspects of Dominion's Virginia City Hybrid Energy Center:** *H. Wheary*, Energy Policy Consultant
- 🌱 **Carbon Capture & Utilization in the Southeast:** *G.R. Hil*, SECARB

3:30pm

Environmental Consideration in Coal Preparation and Waste Management

Location: Appalachian

Chair: **Rick Honaker**, University of Kentucky, Lexington, KY

- 🌱 **Application of Electronic Sorting Technology for Reducing Environmental Impacts of Coal Processing:** *M. Kiser*, *R. Bratton*, *G. Luttrell*, Virginia Tech; and *C. Roos*, Mineral Separation Technologies, Inc.
- 🌱 **Stabilization of Fine Coal Waste as an Alternative Disposal Technique:** *R. Honaker* and *Z. Duan*, University of Kentucky; *D. Cobb* and *S. Baird*, Armstrong Coal
- 🌱 **Applications of a Pilot-Scale Plate Filter Press in Dewatering Coal Slurries:** *M.S. Klima*, *B.J. Arnold*, *J. Munjack* and *B. Barry*, Penn State University and PrepTech, Inc.
- 🌱 **Diesel Range Organics in Coal Preparation:** *J. Morris*, *E. Sarver* and *G. Luttrell*, Virginia Tech
- 🌱 **Minimizing the Environmental Impacts of Coal Waste Disposal:** *M. Rezaee*, *F.E. Huggins* and *Rick Q. Honaker*, Univ. of Kentucky

Community Well-being

Location: Salons A-C

Chair: **John Craynon**, Virginia Center for Coal and Energy Research, Blacksburg, VA

- 🌱 **Decision Tools for Integrating Sustainability in Project Planning and Feasibility Phases:** *A.C. Ramage*, CH2M HILL
- 🌱 **The Mining Industry and Community Poverty Across Appalachia:** *L. Lobao*, *M. Partridge*, *L.A. Brown*, *M. Betz* and *M. Farre*, Ohio State University
- 🌱 **Edgework and Boundary Crossings: Assessing Foundations for Public Ecology in the Appalachian Region:** *M. Hufford* and *B. Taylor*, Virginia Tech
- 🌱 **Determinants of Local Community Acceptance of Energy Resources and Materials Mining:** *S. Que* and *K. Awuah-Offei*, Missouri University of Science and Technology
- 🌱 **Ethics and Community Well-Being:** *P. Denton*, Red River College

Symposium Reception and Dinner

6:00pm • Pavillion

Dinner Speaker: **Dr. Stephen J. Kopp**, President, Marshall University
"Research and Higher Education"

TUESDAY, APRIL 16, 2013

8:00am

Coal, Gas and Energy Production

Location: *Appalachian*

Chair: **Kray Luxbacher**, Virginia Tech, Blacksburg, VA

- ☛ Coal: Past, Present and Future: *Steve Gardner*, ECSI
- ☛ Environmental Considerations and Operational Parameters of Underground Coal Gasification: *Z. Hyder and M. Karmis*, Virginia Tech
- ☛ The Marcellus Shale Gas Play and the Gas Migration/Stray Gas Problem: *J. Vandenbossche, A. Iannacchione and J. Brigham*, Pittsburgh University
- ☛ Experiences in Reservoir Model Calibration for Coal Bed Methane Production in Deep Coal Seams in Russell County, Virginia: *F. Vasilikou, C. Keles, Z. Agioutantis, N. Ripepi*, and *M. Karmis*, Virginia Tech
- ☛ Sustainable Degasification Strategies: A Case Study in the Quinshui Basin of China: *S. Keim*, Cardno MM&A; *K. Luxbacher* and *M. Karmis*, Virginia Tech

Public Health and Energy Production

Location: *Salons A-C*

Chair: **Peter Denton**, Red River College, Winipeg, Canada

- ☛ Evaluation of Research Addressing Chronic Health in Coal Dependent Communities in Central Appalachia: *S. Meacham, S. Sukpraprut, T. Taber and D. Metzger*, Edward Via College of Osteopathic Medicine
- ☛ Comparison of Mortality Rates between Appalachian Coal Mining Counties with Non-Coal Mining: *J. Buchanich, E. Talbott, A. Youk and L. Marshall*, University of Pittsburgh
- ☛ Population and Exposure Characteristics of Coal Mining and Non-Coal Mining Counties in West Virginia: *E. Talbott, L. Brink, L. Marshall and J. Buchanich*, University of Pittsburgh
- ☛ Inventory of Bacterial Impairments in Central Appalachia: *N.A. Cook, L.A. Krometis, E.A. Sarver and C. Davis*, Virginia Tech
- ☛ Identification of Toxic Agents and Potential Exposure Routes to Appalachian Coal Mining Communities: *N.T. Basta, S.D. Whitacre, C.J. Everett, K. Minca and W.L. Daniels*, Ohio State and Virginia Tech
- ☛ The Influence of Misclassification Bias on the Reported Rates of Congenital Anomalies on the Birth Certificates for West Virginia: *S.H. Lamm*, Center for Epidemiology and Global Health, Washington, DC

10:15am

Total Dissolved Solids and Environmental Impacts I

Location: *Appalachian*

Chair: **Stephen Schoenholtz**, Virginia Tech, Blacksburg, VA

- ☛ Comparison of Groundwater Seepage Modeling in Conventional and Geomorphic Valley Fill Design: *N. DePriest, J. Quaranta, L. Hopkinson and P. Ziemkiewicz*, West Virginia Univ.

- 🌿 **Predicting Total Dissolved Solids Release from Overburden in Appalachian Coal Fields:** *J. Odenheimer, J. Skousen, and L. McDonald*, West Virginia University
- 🌿 **Natural Attenuation of TDS in Mountaintop Mines:** *B. Mack, J. Fillhart, B. Gutta and P. Ziemkiewicz*, West Virginia Water Research Institute
- 🌿 **Predicting TDS Release from Appalachian Mine Spoils:** *L. Daniels, Z. Ordndorff, M. Beck, M. Eick, and C. Zipper*, Virginia Tech
- 🌿 **Long-term Trends of Electrical Conductivity in Streams Flowing Out of Headwater Valley Fills in Virginia, USA:** *D.M. Evans, P.F. Donovan, C. Zipper and L. Daniels*, Virginia Tech

Environmental Considerations in Underground Mining

Location: Salons A-C

Chair: **Vlad Kecojevic**, West Virginia University, Morgantown, WV

- 🌿 **Event Tree Failure Mode Development for Mining Near Bodies of Water:** *T. Wachtel and J. Quaranta*, West Virginia Univ.; *D. van Zyl*, Univ. of British Columbia; and *H. Siriwardane*, West Virginia Univ.
- 🌿 **Applications of Subsurface Subsidence Model to Study Longwall Subsidence Influences on Overburden Hydrological System:** *B. Qiu and Y. Luo*, West Virginia Univ.
- 🌿 **Addressing to the Effect of Sloping Terrain on Ground Movements Due to Underground Mining:** *Z. Agioutantis and M. Karmis*, Virginia Tech
- 🌿 **Preliminary Assessment of Factors Affecting Springs Undermined by Longwall Mines in Pennsylvania:** *A. Iannacchione, D. Bain, M. Keener and C. Nealan*, Univ. of Pittsburgh
- 🌿 **Application of Subsidence Prediction Methodologies for Sizing Barrier Pillars for Stream Protection in Appalachia:** *Z. Agioutantis, M. Karmis and L. Kirby*, Virginia Tech

Luncheon

Noon • Pavillion

Luncheon Speaker: Roger Calhoun, Field Office Director, Office of Surface Mining Reclamation and Enforcement, Charleston, WV
"A Regulator's View of Research"

2:00pm

Stream Biota Impacts

Location: Appalachian

Chair: **Todd Petty**, West Virginia Univ., Morgantown, WV

- 🌿 **Methods for Evaluating the Effects of a Simulated Mine Effluent with Elevated Ionic Concentration to Field Collected Benthic Macroinvertebrates:** *M. Yeager-Armstead, M. Wilson, L. Keller, J. Kinney, K. McGill, and E. Snyder*, Marshall University
- 🌿 **Exploring Benthic Impairment and Total Dissolved Solids in the Dumps Creek Watershed:** *L. Kirby, S. Sweeten and J. Craynon*, Virginia Tech
- 🌿 **Benthic Macroinvertebrate Response to Total Dissolved Solids in Coal Mine Streams:** *T. Timpano, B. Boehme, D. Drover, S. Schoenholtz, C. Zipper*, Virginia Tech; and *D. Soucek*, Illinois Natural History Survey

- 🌿 **How Well Does Electrical Conductivity Predict Stream Impairment?:** *P.F. Ziemkiewicz*, West Virginia University, and *S. Northway*, University of British Columbia
- 🌿 **Evaluation of Current Measures in the Central Appalachian Coalfields: Efficacy and Implications:** *S. Sweeten*, Virginia Tech; *J. Sweeten*, Manchester College; *J. Craynon*, *W.M. Ford*, and *S. Schoenholtz*, Virginia Tech

Landforms and Geomorphic Reclamation

Location: Salons A-C

Chair: Braden Lusk, University of Kentucky, Lexington, KY

- 🌿 **Sustainable Landform Construction on Coal Mining Operations that Require Valley Fills:** *R. Warner*, University of Kentucky, and *C. Zipper*, Virginia Tech
- 🌿 **Methodology for Geomorphic Landform Design of Valley Fills in Appalachia Surface Mine Reclamation:** *J. Quaranta*, *C. Bise*, *A. Sears* and *L. Hopkinson*, West Virginia University
- 🌿 **Investigating Regional Design Parameters in the Design of West Virginia Valley Fills to Support Application of Geomorphic Landform Design Principles:** *C. Buckley*, *L. Hopkinson*, *J. Quaranta*, *B. Mack*, and *P. Ziemkiewicz*, West Virginia University
- 🌿 **Slope Stability Analysis of Geomorphic Landform Profiles Versus Approximate Original Contour Applied to Valley Fill Nick Bugosh Designs:** *J. Quaranta* and *H. Russell*, West Virginia University
- 🌿 **Natural Regrade in Appalachia:** *N. Bugosh*

3:45pm

Selenium in the Environment

Location: Appalachian

Chair: Rob Reash, AEP, Columbus, OH

- 🌿 **Subsurface Sequestration of Leached Waste-rock Selenium in Reactive Ferrihydrate Beds:** *P. F. Ziemkiewicz* and *J.J. Donovan*, West Virginia University
- 🌿 **Selenium Concentrations and Solid State Chemical Speciation in Black Shale Associated with a West Virginia Coal Seam:** *J. Unrine*, *B. Collin*, and *R. Warner*, Univ. of Kentucky
- 🌿 **Selenium Treatment for Mine Water Discharge Compliance:** *T. Harrison*, *K. Munirathinam*, *K. Martins*, *J. Bays*, *K. Jenkins* and *S. Dorminy*, CH2M HILL
- 🌿 **Strategies for Remediation of Selenium-Laden Waters:** *M. Huddleston*, Cardno ENTRIX; *J. Rodgers, Jr.*; and *J. Castle*, Clemson University; and *M. Spacil*, DiamondV
- 🌿 **Analysis of Low-Level Se in Coal Mine Discharges:** *R.J. Vitale* and *G. Kirkpatrick*, Environmental Standards, Inc.; and *M. Harris*, ToxStrategies, Inc.

Stream Restoration

Location: Salons A-C

Chair: Mindy Yeager-Armstead, Marshall University, Huntington, WV

- 🌿 **Natural Streams: Biological Effects of Natural Channel Design for Aquatic Habitat Restoration:** *J.J. Noble*, Wallace & Pancher, Inc.
- 🌿 **Hydrologic Assessment of the Guy Cove Stream Restoration Project:** *T. Maupin*, *C. Agouridis*, *C. Barton*, and *R. Warner*, University of Kentucky

- 🌿 **The Guy Cove Stream Restoration Project: Recreating a Headwater Stream System on a Head-of-the-Hollow Fill:** *C. Agouridis, C. Barton, R. Warner, University of Kentucky; and H. Jin, University of Louisville*
- 🌿 **Leaf Litter Breakdown as a Functional Assessment Tool for Appalachian Coal-Mine Stream Restorations:** *R. Krenz III, S. Schoenholtz, and C. Zipper, Virginia Tech*
- 🌿 **Substrate and Seeding Treatments Effects on Native Tree Establishment and Herbaceous Cover on an Appalachian Coal Mine: First Growing Season Results:** *S.C. Koropchak, C. Zipper, J.A. Burger and D.M. Evans, Virginia Tech*

WEDNESDAY, April 17, 2013

8:30am

Total Dissolved Solids and Environmental Impacts II **Location: Appalachian**

Chair: **Lee Daniels**, Virginia Tech, Blacksburg, VA

- 🌿 **Conductivity Sensor Accuracy and Temporal Stability: A Laboratory and Field Study:** *T. Maupin, C. Agouridis, C. Barton and R. Warner, University of Kentucky*
- 🌿 **Screening-level Specific Conductivity Testing of Drill Core Strata:** *R. Warner and T. Monday, University of Kentucky*
- 🌿 **Field Data and Regulatory Aquatic Life Criteria:** *R. Gensemer, S. Canton, S. Roark, K. Bennett and B. Smith, GEI Consultants, Inc.*
- 🌿 **Chronic Toxicity Testing in Mining Influenced Streams of West Virginia:** *L. Creathers and M. Armstead, Marshall University*

Environment and Coal Mining

Location: Salons A-C

Chair: **Emily Sarver**, Virginia Tech, Blacksburg, VA

- 🌿 **Surface Coal Mine Blasting Optimization and Mitigation of Environmental Impacts: Mine to Fill:** *C. Johnson, B. Lusk, J. Hoffman and J. Rathbun, University of Kentucky*
- 🌿 **Production, Cost, and Environmental Impact of Loading Equipment in Surface Coal Mining in Appalachia:** *V. Kecojevic and A. Lashgari, West Virginia University*
- 🌿 **NOx Emission of Equipment and Blasting Agents in Surface Coal Mining:** *A. Lashgari, C. Johnson and V. Kecojevic, West Virginia Univ.; B. Lusk and J. Hoffman, Univ. of Kentucky*
- 🌿 **Micro-Hydroelectric Power Generation Utilizing Mine Drainage:** *B.J. Page, T.P. Danehy, C.A. Neely, S.L. Busler, C.F. Denholm, R.M. Mahony and M.H. Dunn, BioMoist, Inc.*
- 🌿 **Minepool Geothermal in Pennsylvania:** *M. Korb, Pennsylvania DEP, Bureau of Abandoned Mine Reclamation - Wilkes-Barre*

10:30am

Plenary Session:

Energy Resources and Sustainable Development

Location: Salons A-C

Chair: **John Craynon**, Virginia Center for Coal and Energy Research, Blacksburg, VA

A panel of international experts will give their perspectives on challenges in addressing the contributions that energy production makes to sustainable development through discussion of case studies, global efforts on sustainability and specific issues related to sustainable development. The role of science and engineering in addressing

the challenges of meeting the goal of providing for social, environmental and economic needs of current and future generations will also be addressed.

- 🌱 **Sustainability in Surface Coal Mine Operations: The Importance of Good Geotechnical Design:** *Z. Agioutantis*, Technical University of Crete
- 🌱 **An International Perspective on Sustainable Development in Mining:** *D. Shields*, Colorado State University
- 🌱 **Ethics and Sustainable Development:** *P. Denton*, Red River College
- 🌱 **Review of Symposium:** *M. Karmis*, Virginia Tech
- 🌱 **Closing Remarks:** *J. Craynon*, Virginia Tech



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POSTER SESSION

Sunday, April 14, 2013 • Pavillion

*Held in conjunction with the Welcoming Reception
5:00pm - 6:30pm*

Response of Laboratory Reared Test Organisms Compared to Field Collected Benthic Macroinvertebrate Communities Exposed to Simulated Stream Water with Elevated Dissolved Solids:

L. Keller, M. Armstead and M. Wilson, Marshall University, Huntington WV

Effectives of Elevated Dissolved Solids on Tubifex Worms Compared to Field: Collected Benthic Macroinvertebrates:

K. McGill, M. Wilson and M. Yeager-Armstead, Marshall University, Huntington, WV

Toxicity of Simulated Mine Effluent with Elevated Ionic Concentration to *Hyalella Azteca*: *J. Kinney, M. Yeager-Armstead and M. Wilson, Marshall University, Huntington, WV*

Evaluation of Toxicity from Elevated Ionic Concentrations on Lab Reared and Field Collected Benthic Macroinvertebrates:

A. Parsons-White, M. Wilson and M. Yeager-Armstead, Marshall University, Huntington, WV

Comparison of the Demographics for the Population of Appalachia Coal Mining Counties with Non-Coal Mining Counties: *A. Potter, J. Buchanich, E. Talbott, A. Youk and L. Marshall, University of Pittsburgh, Pittsburgh, PA*

The Influence of Geology and Mining Layouts on Down-dip Barrier Performance in Pennsylvania Coal Mines: *L. Mignogna, M. Keener and B. Bucha, University of Pittsburgh, Pittsburgh, PA*

A Comparison of Circulatory and Respiratory Hospitalization Rates of Coal Mining and Non-Coal Mining Counties in West Virginia: A Preliminary Analysis: *L. Marshall, E. Talbott and L. Brink, University of Pittsburgh, Pittsburgh, PA*

Analysis of Published Literature on Health Disparities in Chronic Conditions in Central Appalachia: *S. Meacham, S. Sukpraput, A. Whitener and C. Goesll, Edward Via Virginia College of Osteopathic Medicine, Blacksburg, VA, Master of Health Sciences, Western Illinois University, Macomb, IL*

The Influence of Economic Factors on Differing Prevalence Rates of Diabetes Mellitus in Selected Health Districts in Virginia: *A. Snyder, S. Meacham and S. Sukpraput, Edward Via Virginia College of Osteopathic Medicine, Blacksburg, VA*

The Impact of Fluctuating Coal Production on Indicators of Socioeconomic Status in Southwest Virginia: *T. Taber, S. Meacham and S. Sukpraput, Edward Via Virginia College of Osteopathic Medicine, Blacksburg, VA*

Complex Land Use Thresholds and Multi-Stressor Impacts to Streams in the Mountaintop Minig Region of Central Appalachia: *E.R. Merriam and J.T. Petty, Division of Forestry and Natural Resources, West Virginia University*