

**Shale Network 2015 Workshop, [www.shalenetwork.org](http://www.shalenetwork.org), May 7-8, 2015**  
**Atherton Hotel (State College PA) and 144 Stuckeman Family Building (PSU)**  
**Lessons Learned about Water Issues**  
**in the Northeastern Region of Shale Gas Development.**

<b>Thursday, May 7</b>	<b>Atherton Hotel - Lobby</b>	
2:00-2:30 pm	<b>Registration will take place in Hotel Lobby (introduction of participants)</b>	
2:30 pm	<b>HydroDesktop participants meet in Hotel Lobby at 2:30 pm. Commute to computer lab on PSU campus – 144 Stuckeman Family Building (20 minute commute by foot and/or campus bus)</b>	
3:00 – 5:00 pm	<b>HydroDesktop Demonstration and Hands-On Exercise: “Data Discovery and Analysis” 144 Stuckeman Family Building</b>	Shale Network Team, Jon Pollak (CUAHSI), Susan Brantley
5:30 pm	<b>Poster set up in Hotel Lobby (Posters can be viewed Thursday evening and until noon on Friday)</b>	
6:00 - 9:30 pm	<b>Poster Session with reception and cash bar – Hotel Lobby (Registration from 6pm – 7 pm)</b>	
<b>Posters</b>		
Case Study of Stray Gas Migration Incident Associated with Unconventional Shale Development in Northeastern Pennsylvania – <b>W. Kosmer, S. Pelepko, S. Beattie, H. Wise</b>		
Detecting Surface Water Contamination Events from Unconventional Drilling Operations in PA Using Publicly Available Water Quality Databases – <b>M. Gonzales, F. Wu, Z. Li, S. Brantley, C. You</b>		
Using the Shale Network to Train Future Scientists – <b>Teen Shale Network (30) students (5) teachers (5) PSU</b>		
Numerous Tools Benefit Water Issues for Shale Gas Applications – <b>P. DeBarber, M. Pohl, D. Vojtko</b>		
Quantifying the Environmental Impacts of Shale Gas Wastewater Treatment Strategies: Comparison of Onsite Treatment for Reuse and Reinjections to Treatment in Plants to Recycle – <b>S. Arjmand, J. Abad, V. Khanna</b>		
Organic Fate and Fluid Chemistry of Synthetic Fracturing Fluids Reacted with Marcellus Shale – <b>T. Tasker, W. Burgos, C. Gorski</b>		
Water Management in Hydraulic Fracturing - A Planning and Decision Optimization Platform – <b>N. Mehta, F. O’Sullivan</b>		
Estimates of Shale Energy Wastewater Discharge Loading to Select Receiving Streams Based on Use of Form 26R Data from Southwestern Pennsylvania – <b>D. Yoxtheimer, C. Simon, S. Arjmand</b>		
Spatial and Temporal Characterization of Watersheds and Stream Contamination Near Unconventional Drilling Sites – <b>Y. Han, S. Arjmand, J. Abad, R. Vidic, C. Simon, C. Wilderman, S. Brantley, C. Fu</b>		
Use of Abandoned Mine Drainage for the Development of Unconventional (Shale) Gas Resource – <b>C. He, R. Vidic</b>		
Angler Scientists Monitoring Shale Gas Development Impacts in Central Appalachia – <b>J. Lemon, K. Fesenmyer</b>		
A Growing Effort in Monitoring Stream Methane Concentrations in PA – <b>S. Hynek, T. Sowers, S. Brantley, J. Lemon</b>		
Seismicity in Pennsylvania – <b>K. Homman, A. Nyblade</b>		
Testing for Environmental Justice Implications of Marcellus Shale Violations by Combining Shale Network and Social Science Data – <b>K. Brasier, J. Pollak</b>		

<b>Friday, May 8</b>	<b>Atherton Hotel – Vanderbilt Room</b>	
7:30 am	<b>Continental Breakfast in Hotel Lobby: Informal Introductions</b>	
8:00 am	<b>Brantley, S.:</b> Welcome to 2015 Workshop; Introduction to Shale Network	
Plenary Talks (bold name = speaker)		
8:20 am	<b>Betano, E.</b> , E.R. Hagen, J.T. Wilson, K.H. Reckhow, L. Hayes, D.M. Argue: Availability of Water Data to Answer Priority Policy Questions: Evaluation of Available Water-quality Data to Determine Whether Shale Gas Development Activities Contaminate Surface Water or Groundwater in the Susquehanna River Basin	
8:40 am	<b>Pelepko, S.</b> , S. Beattie, H. Wise, W. Kosmer : Integrating Data to Identify Evidence of Anthropogenic Stray Gas Migration and Develop Tools for Assessing Water Supply Complaints	
9:00 am	Zhang, T., <b>R. Vidic</b> : Environmental Concerns with NORM Generated by Shale Gas Extraction – Management Strategies and Health Risks	
9:20 am	<b>Steffy, L.</b> - (Susquehanna River Basin Commission): An Evaluation of Macroinvertebrate Assemblages in the Marcellus Shale Region of the Susquehanna River Basin, 2011-2013	
9:40 am	<b>G. Llewellyn</b> , F.L. Dorman, J.L. Westland, D. Yoxtheimer, P. Grieve, T. Sowers, E. Humson-Fulmer, S.L. Brantley: Evaluating a Groundwater Supply Contamination Incident Due to Marcellus Shale Gas Development	
10:00 am	<u>Discussion: What are the major water quality problems that need attention in the northeastern area of shale gas?</u>	
10:20 am	Coffee in Hotel Lobby	
10:40 am	<b>Azzolina, N.</b> E. Perry, B. Smith, D. Siegel: Methane Concentrations in Water Wells Unrelated to Proximity to Existing Oil and Gas Wells in Northeastern Pennsylvania	
11: 00 am	<b>Li, J.</b> , S. Brantley, C. You, M. Gonzales, F. Wu: Data Mining on Water Quality Data	
11:20 am	<b>Abad, J.</b> , Y. Han, C. Simon, S. Arjmand, C. Wilderman, S. Brantley, R. Vidic: Modelling PA Streams to Determine Monitoring Gaps and Optimum Sensor Spacing	
11:40 am	<u>Discussion: Where are the data gaps and science needs: where should we encourage scientists and citizen scientists to monitor or do research?</u>	
12:00 pm	<b>Take down posters</b>	
12:15 pm	<b>Lunch in the Tarragon Dining Room – Atherton Hotel</b>	
	<b>Room 1 – Vanderbilt Room</b> <b>Ground Water Science and Monitoring</b>	<b>Room 2 – Executive Boardroom</b> <b>Surface Water Science and Monitoring</b>
1:15 pm	<b>Darrah, T.</b> (Ohio State University), A. Vengosh, R. Jackson, N. Warner, B. Poreda: Gas Leaks from Badly Constructed Wells Linked to Contamination in Groundwater, Not Hydraulic Fracturing	<b>Risser, D.</b> (USGS), V.M. Heilweil, P.L. Grieve, S. Hynek, S. Brantley, D. Solomon: Stream Monitoring for Estimating Methane in Groundwater Discharge to Streams – Lessons learned from a Pilot Study in Northern Pennsylvania
1:35 pm	<b>Baldassare, F.</b> (ECHELON): Regional Variability in the Gas Geochemistry of the Appalachian Basin & Implications for	<b>Klemow, K.</b> (Wilkes U.), D. Bruns, B. Naberezny: Stream Macroinvertebrate Indicator Response to Selected Measures of Habitat, Water Chemistry, Land Use, and Marcellus Shale Gas Development

	Investigations of Stray Gas in an Aquifer System	in the Susquehanna Basin of Northeastern Penna.
1:55 pm	<b>Vitale, R.</b> (MSC), D. Gratson, S. Brower, L. Work, D. Yost, J. Smelko, L. Anderson: Marcellus Shale Coalition, Dissolved Methane Method Study	<b>Wilderman, C.</b> (ALLARM, Dickinson): Citizen Scientists Monitoring Shale Gas Impacts on Small Streams: An Analysis of Operational Models and Lessons Learned in Pennsylvania
2:15 pm	<b>Wilson, B.</b> (Chesapeake Energy): Geologic and Baseline Groundwater Evidence for Naturally Occurring, Shallow Source, Thermogenic Methane Gas in Northeastern Pennsylvania	<b>I. Cozzarelli</b> (U.S.G.S.): USGS Toxics Program Integrated Field Studies of Leaks and Spills Related to Unconventional Oil and Gas Development Wastes
Coffee in the Vanderbilt Room		
2:55 pm	<b>Chapman, L.</b> (ECHELON Consulting): The Use of Strontium Isotope and Element Geochemistry to Characterize Water from Fossil Fuel Sources	<b>Manthos, D.</b> (Skytruth): (Waste) Water, Water Everywhere – Mapping Drilling Impoundments in Pennsylvania through Crowdsourcing Analysis of Aerial Survey Imagery
3:15 pm	<b>Smith, B.</b> (Enviro Clean PS), D. Siegel, E. Perry: Methane Occurrence and Water-quality Characteristics Found in Groundwater of the Appalachian Basin	<b>Akob, D.</b> (USGS): Unconventional Oil and Gas Wastewater Impoundment Leaks and Spills: A Combined Field and Laboratory Study of Biogeochemical Processes
3:35 pm	<b>TBA</b>	<b>Khalequzzaman, M.</b> (Lock Haven University), E. Pirrone, A. Neidig, T. Keane: Community-based Water Quality Monitoring Projects in Marcellus Shale Gas Drilling Regions in Centre, Clearfield, and Clinton Counties, PA
4:00 pm	<b>Vanderbilt Room</b> <u>Plenary Discussion -- What are the major lessons learned in the northeast with respect to shale gas development and water quality and quantity issues?</u>	
4:30 pm	<b>Wrap Up Statements: What Do We Need to Do Next?</b>	
4:45 pm	<b>Assessment</b>	Kathy Brasier