



# PCPG

Pennsylvania Council of Professional Geologists  
116 Forest Drive • Camp Hill, PA 17011  
Phone (717) 730-9745 • pcp.org

## ***Variability in the Gas Geochemistry of the Appalachian Basin and Contemporaneous Influences on Fate and Transport***

**September 11, 2017**

Regional Learning Alliance  
850 Cranberry Woods Dr., Cranberry Twp., PA

### **Overview**

The occurrence and origin of methane in aquifer systems has become an emerging focus in areas of unconventional shale gas development in the Appalachian Basin. Methane occurrence in an aquifer system may be a natural condition, the result of legacy conditions or due to recent activity. Evaluation at the site-specific level to include time series gas and groundwater geochemistry data, and mechanism of migration are fundamental to define methane origin and source. This course will provide an outline for sampling and laboratory variability, principals of methane migration, evaluation of time series geochemistry data and variability in the gas geochemistry of the N. Appalachian Basin

### **Agenda**

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|------------|---|
| 12:30-1:00 | Arrivals and Registration   |
| 1:00-1:05  | Welcome and Introduction (Dan Billman, P.G., PCPG President)  |
| 1:05       | Introduction. Physical/chemical properties: methane & C2-C4 straight chain alkane hydrocarbons, sampling & laboratory variability (Fred Baldassare, P.G.) |
| 2:30-2:40  | Break   |
| 2:40-4:00  | Gas geochemistry of the N. Appalachian Basin. Evaluation of time series geochemistry data   |
| 4:00-4:10  | Break   |
| 4:10-4:45  | Response protocol, case studies   |
| 4:45       | Adjournment<br>Complete Evaluation, Sign-Out, Receive Certificate of Attendance   |

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### **About Our Instructor**

**Fred Baldassare, P.G. (ECHELON Applied Geochemistry Consulting)** - Fred is the owner and Principal geoscientist at ECHELON Applied Geochemistry Consulting. He has more than 25 years of experience investigating more than 300 reported incidents of stray gas migration. He is an experienced investigator and researcher who helped pioneer the application and advancement of isotope geochemistry to identify and distinguish the origin of different microbial and thermogenic gases in the Appalachian Basin. Fred has evaluated gas geochemistry data for investigations throughout North America.

Fred was the lead author for Pennsylvania's Oil & Gas regulations (25 PA. CODE CH. 78, §78.89) for stray gas incident response, the Marcellus Shale Coalition's technical guidance for stray gas investigations, and co-author of the Department of Interior's comprehensive manual for investigating and characterizing incidents of stray gas migration: "Technical Measures For The Investigation And Mitigation Of Fugitive Methane Hazards In Areas of Coal Mining" (Eltschlager, et al., 2001). Fred has authored or co-authored professional papers for peer reviewed journals on the application of isotope geochemistry since 1997. He has lectured and taught internationally, and at his alma maters, Penn State University and The University of Pittsburgh.