

# PCPG

116 Forest Drive, Camp Hill, PA 17011  
Phone (717) 730.9745 • Fax (717) 730.6786  
[www.pcp.org](http://www.pcp.org)

## ***Fate and Transport Analysis Using Quick Domenico, SW Load and PENTOXSD***

*Approval Pending for 8 CEUs in DE and SC*

### **Course Description**

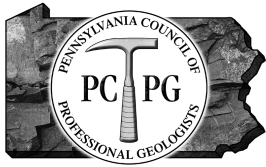
This one-day course presents three analytical software programs published by PADEP. The models simulate solute transport in groundwater, discharge to a stream, and dispersion within the stream. Specific topics include: review of the conceptual models simulated by the software, selection of chemical and physical input parameters, model calibration, determining stream flows and upstream watershed dimensions and methods to check model results. The Domenico model will be presented using the site and actual data from a 1992 paper by Ala and Domenico. Additional examples and problems will be used to demonstrate fate and transport analysis using source areas of various sizes and proximity to various receiving streams. All examples will be conducted live. Completion of the course should provide the attendee a better understanding of and respect for the capabilities and limitations of these fate and transport models.

### **Instructors**

**Steve Sayko, PG** holds a BS in Physics and an MS in Geology and has over 25 years of experience in environmental consulting. He is the President and Principal Hydrogeologist of Services Environmental, Inc. in Phoenixville, PA. He has applied his expertise in hydrogeology and quantitative hydrogeologic data analysis to RCRA, CERCLA, and State-lead projects serving industry, the legal community, and the public sector. His project experience includes numerous geologic/hydrogeologic/environmental investigations, developing conceptual models, surface water and groundwater volatilization modeling, flow and transport modeling, groundwater and soil remediation using traditional and innovative technologies, providing unique approaches to remedial design performance evaluation, and designing strategies to optimize the performance of remediation systems. He has also prepared expert reports for Natural Resources Damages cases and served as an expert technical witness for an innovative septic system design.

**Tom Starosta, PE** has over 30 years of experience in the environmental engineering field, including 8 with DEP. He is a Environmental Engineer Consultant in DEP's Central Office Bureau of Water Standards and Facility Regulation. He is a technical expert on the application of water quality-based effluent limits (WQBELs) in Pennsylvania and routinely provides statewide support to the regional offices. He is one of the Department's primary contacts with EPA Region III in the NPDES permitting program and serves as an alternate on the DRBC Toxics Advisory Committee.

**Jim LaRegina, PG** holds a BS in Environmental Resource Management and an MA in Earth Science and has over 30 years of experience in the environmental field. He is a Senior Project Manager for Herbert, Rowland & Grubic, Inc., Harrisburg, PA. He has managed multi-disciplinary project teams in solid and hazardous waste, underground storage tanks and land recycling programs projects ranging up to complex CERCLA remedial investigations and feasibility studies. He has worked in both bedrock and unconsolidated frameworks with both dissolved phase and non-aqueous phase contaminants.



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## ***Fate and Transport Analysis Using Quick Domenico, SW Load and PENTOXSD***

*Approval Pending for 8 CEUs in DE and SC*

**March 31, 2010**

**PSU Great Valley, Malvern, PA**

### **Agenda**

- |             |  |
|-------------|--|
| 7:30 - 8:00 | Registration/Continental Breakfast   |
| 8:00 - 8:30 | Introduction: Setting the stage for F&T analysis using site characterization data (Jim LaRegina, PG)   |
| 8:30-10:00  | Putting F&T Analysis in Perspective: Simple versus complex models, their data requirements, assumptions and limitations (Steve Sayko, PG)  |
| 10:00-10:15 | Break  |
| 10:15-11:15 | Quick Domenico<br>Domenico's original paper, predicting concentrations downgradient of a continuous release, infinite uniform homogeneous aquifer, unidirectional flow and velocity, simulating dispersion in 3-dimensions, simulating contaminant retardation due to linear partitioning, and simulating first order decay (i.e., half-lives) |
| 11:15-12:00 | Quick Domenico-continued<br>Determining input variables, calibrating the model, example model  |
| 12:00-12:30 | Group Luncheon   |
| 12:30-1:00  | Quick Domenico-continued<br>Example model  |
| 1:00-2:00   | SW Load<br>Determining input variables, understanding and applying EDGE Criteria, checking the result, example calculation (Steve Sayko, PG)   |
| 2:00-2:15   | Break  |
| 2:15-3:15   | PENTOXSD<br>Determining input variables, checking the result, example calculation (Tom Starosta, PE)   |
| 3:15-3:45   | Available Resources for Analysis<br>Default values, flow data, StreamStats (Steve Sayko, PG)   |
| 3:45-4:30   | Example Problems<br>Expanding QD Capabilities, how to create a refined grid, simulating a pulse source (Steve Sayko, PG)   |
| 4:30-5:00   | Summary, Review, Questions & Answers   |
| 5:00 PM     | Adjournment & Certificate of Attendance  |



# Fate and Transport Analysis Using Quick Domenico, SW Load and PENTOXSD

8 Hour Short Course

Approval Pending in DE and SC for 8 CEUs

**Wednesday, March 31, 2010**

**Penn State Great Valley**

30 E. Swedesford Rd., Malvern, PA

**7:30 AM Registration & Continental Breakfast**

**8:00 AM - 5:00 PM - Seminar (Lunch Included)**

**Overview:** An understanding of contaminant fate and transport mechanisms is essential for characterizing the risk posed by contaminated groundwater migrating beyond the property line. Analytical transport models such as the Quick Domenico model, have gained widespread use, in large part due to the availability of free, easy to run, and regulatory "endorsed" spreadsheet models. While simple to use, these spreadsheet models require an understanding of the hydrogeologic conditions similar to the understanding required for a more complex numerical flow model such as MODFLOW. The objective of the short course is to demonstrate appropriate, and inappropriate, application of the simple fate and transport models to real-world problems.

**Instructors**

**Jim LaRegina, PG, Senior Project Manager**  
Herbert, Rowland & Grubic, Inc.

**Steve Sayko, PG, President**  
Services Environmental, Inc.

**Tom Starosta, PE**  
Environmental Engineer Consultant, DEP

**Who Should Attend:** The course covers application of the PADEP models to complex, real-world sites, and is focused on practicing geologists and allied scientists with a basic understanding of fate and transport. Prior experience with these tools is helpful but not necessary. The use of mass balance analysis used in these models is also useful to those who do wasteload allocation calculations as part of surface water permitting and related activities. Each attendee should bring a calculator. Laptops are not required. A CD of each model/spreadsheet will be provided with course materials.

**Registration Fees**

Includes continental breakfast, lunch, and course materials.

- \$159 PCPG Members (discounted \$30)**
- \$189 Nonmembers**
- \$150 PCPG Annual Membership**

**ENROLLMENT FORM**

**Seating is limited. Registration Deadline 3/26/10**  
**\$25 Late Registration Fee MUST BE ADDED if enrolling after 3/26/10**

Add \$150 for PCPG Membership

\$\_\_\_\_\_ Total Amount     Check (payable to PCPG)

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\_\_\_\_\_ Signature of Above

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**116 Forest Drive**  
**Camp Hill, PA 17011**

**Credit Card Registrations may be faxed to**  
**(717) 730-6786**

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