



The Patchy Fog Model of Vapor Intrusion

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Thursday, January 17, 2008

During the past two years, New York State has been investigating the nature and distribution of trichloroethylene (TCE) contamination in the groundwater, soil gas and indoor air in a residential development in Cortlandville, New York. The development is situated immediately downgradient of a former manufacturing facility that released TCE to the groundwater in the late 1980's. The study area sits in a glacial valley above an unconfined aquifer comprised of highly permeable outwash sands and gravels. The depth to the water table ranges from 7 to 20 feet. Although the distribution of TCE in the shallow groundwater beneath the study area appears to follow a predictable pattern, the distribution of TCE vapors in the subslab of the houses above the groundwater plume does not. It is common to obtain subslab vapor concentrations from neighboring homes that differ by one to three orders of magnitude. The TCE vapor concentrations obtained from multiple subslab samples beneath a single home differ markedly as well; often by more than an order of magnitude.

These data, and similar results from several other vapor intrusion sites in the state, suggest that the classic conceptual model of vapor intrusion, a model in which a homogeneous blanket of vapor diffuses upward from a groundwater source and enters the structures above, oversimplifies conditions at many sites. Geologic and anthropogenic factors often produce contaminant vapor distributions that are more likely to resemble a patchy fog than a homogeneous blanket. Because the spatial variability of the data diminishes our capacity to reliably extrapolate and interpolate results from house to house, the number of structures that are sampled and the number of samples per structure needed to adequately characterize a site will almost certainly increase when compared to historical norms.

Dr. Wertz received his B.S. and Ph.D. in Geology from Penn State University. Since joining the NYSDEC in 1982, he has been involved in site investigations and remedial program development at hazardous waste sites throughout New York. He began working on vapor intrusion issues in 1999. Beginning in 2001, he served as a technical advisor and then project manager for the IBM Endicott remedial program, a site where more than 500 structures have been impacted by vapor intrusion. He has participated in the development of New York State's vapor intrusion guidance and policy documents. He is currently conducting research on the spatial and temporal variability of VOCs in the sub-slab environment. Dr. Wertz recently published the paper, McDonald, G.J. and W.E. Wertz, "*PCE, TCE*" and *TCA Vapors in Subslab Soil Gas and Indoor Air: A Case Study in Upstate New York*", *Ground Water Monitoring & Remediation*, 27, no. 4, Fall 2007, pages 86-92.



MEETING LOGISTICS:

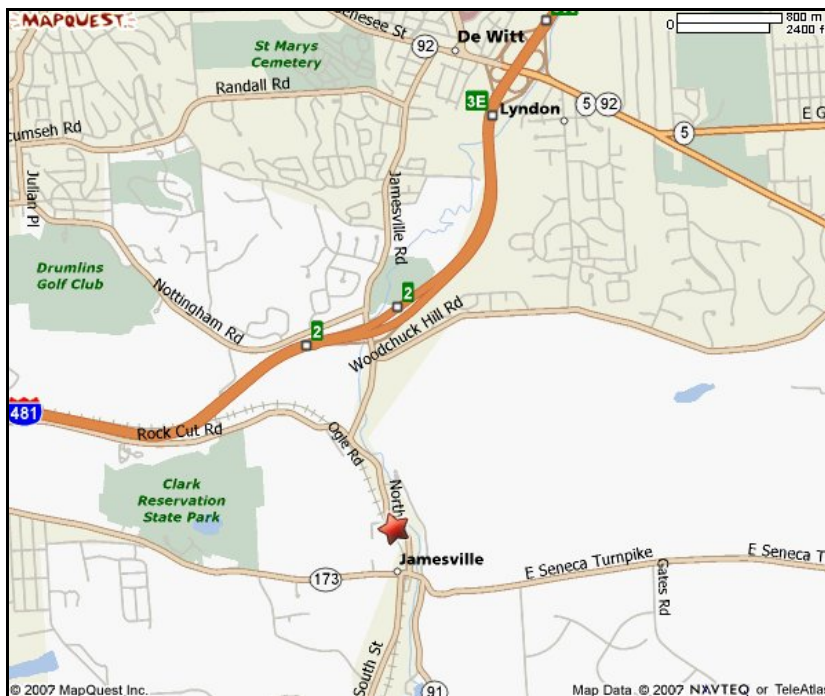
The meeting will take place on Thursday, January 17, 2007 at the **Glen Loch Restaurant in Jamesville.** Directions are provided below.

A social hour will start at 5:30 pm and will be followed by a dinner starting at 6:30 p.m. The presentation by Dr. Wertz will begin at about 7:30 p.m.

The cost of the dinner/meeting is:

- Members – Dinner & Meeting - \$25
- Members – Meeting only - \$5
- Nonmembers – Dinner & Meeting \$30
- Nonmembers – Meeting only \$10
- Students – Dinner & Meeting \$15
- Students – Meeting only \$5
- CNYAPG will sponsor first 4 students for Dinner & Meeting

Please RSVP by Wednesday, January 16th Noon to Annette at Parratt-Wolff, info@pwinc.com or (315) 437-1429.



Directions to the Glen Loch Restaurant – www.glenloch.net

4626 North Street, Jamesville, NY 13078. 315-469-6969

Take Route 481 to Exit 2 in Jamesville. Go South on Jamesville Road (up the hill) until you come to a three way intersection. Bear left onto North Street. Continue down this road, and you will see the Glen Loch on your left.

CNYAPG

P.O. Box 567, DeWitt, NY 13214

<http://www.cnyapg.org>