Vapor Intrusion at a Former Dry Cleaner in Southeast Wisconsin

When bad things happen to good people...

Working with State and Local Health Departments
• 2 story, stand-alone building
• 1st level now vacant – formerly occupied by dry cleaner
• 2 apartments occupy second level

• Concrete block
• Slab on grade
• Garage under north apartment
Timeline of Actions

- Notification – 08/27/08
- Consultant Selection/Scope Approval – 08/28/08 to 06/18/09 – 10 months
- Indoor Air Testing/Health Posting – 12/31/09 to 02/15/10 – 46 days
- Soil Data Received – 08/25/09
Shallow soil – PCE concentrations

- 18,000 ug/kg in Boiler room – former drum storage
- 64,000 ug/kg at Staining on floor
- 48 ug/kg at Hole in floor
- 1,900 ug/kg near GP-1
- 32 ug/kg near GP-4

PCE concentrations in shallow soil are indicated with specific locations and concentrations.
Timeline of Actions

- **Notification** – 08/27/08
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- **Soil Data Rec’d/Scoping for Air Sampling** – 08/25/09 to 11/24/09 – 3 months

Timeline:
- **August 2008**
- **June 2009**
- **January 2010**
First Level – former drycleaner space – now vacant

East wall – floor stained – GP3 in bottom left corner (1,900 ug/kg PCE)

South end – front of store
Standing on the approximate location of GP-5

(18,000 ug/kg PCE)

Looking south towards store front area

Looking north into boiler room
Sewer Repair resulted in floor opening – direct pathway for vapor migration
Indoor air sample locations - apartments
Outdoor (Background) Sample

Near northeast Corner of Building
# Air Sample Results – Tetrachlorethylene (ppbv)

DNR Target Level = .603 ppbv  
Health Department Action Level = **6.03 ppbv**

<table>
<thead>
<tr>
<th>Date</th>
<th>South Apartment</th>
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<th>Outside</th>
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<tr>
<td>12/09/09</td>
<td>52</td>
<td>264</td>
<td>ND</td>
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<td>1/11/10</td>
<td>11.5</td>
<td>26.1</td>
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<td><strong>Main Level – Former DC space</strong></td>
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January 11 to 25th, 2010

Building owner personally undertakes intervention measures
Installed vent fan to vent the sub-slab airspace on the first floor
Sealed concrete block spaces in back part of first level
Boiler Room floor and wall sealing
Removed carpet – Cleaned and sealed floor cracks on first level
Sealed hole around sewer pipe on first level
Sealed utility penetrations leading to the second floor apartments
## Air Sample Results – Tetrachlorethylene (ppbv)

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PCE concentrations in indoor air vs. Agency targets (Upstairs South Apartment)

DNR Target Concentration 1 in 100,000 excess cancer risk = 0.6 ppbv
Health Dept Limit - 1 in 10,000 excess cancer risk = 6 ppbv
Upstairs South Apartment Levels
PCE concentrations in indoor air vs. Agency targets (Upstairs North Apartment)

- **DNR Target Concentration**: 1 in 100,000 excess cancer risk = 0.6 ppbv
- **Health Dept Limit**: 1 in 10,000 excess cancer risk = 6 ppbv
- **Upstairs North Apartment Levels**
PCE concentrations in indoor air vs. Agency targets (First Floor Storefront)

- **DNR Target Concentration** 1 in 100,000 excess cancer risk = 0.6 ppbv
- **Health Dept Limit** - 1 in 10,000 excess cancer risk = 6 ppbv
- **First Floor Storefront Levels**

Sample events:
- 12/10/09
- 12/18/09
- 12/26/09
- 01/03/10
- 01/11/10
- 01/19/10
- 01/27/10

- 40 ppbv at 12/10/09
- 1.5 ppbv at 01/27/10

- 4.3 ppbv at 01/27/10
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2011 Update

• Owner has received DERF reimbursement for investigation and mitigation actions taken through February 2010
• Building remains unoccupied since February 2010
• Mitigation fan has been running since installation
• Owner has cleaned, sealed and painted floor in first level
• Added a small fan to vent sub-floor space below boiler room
• Cleaned interior walls of apartments (carpet cleaned or replaced)
Special Thanks to:

- Henry Nehls Lowe – for responsive, calm, thoughtful approach
- Terry Evanson – for providing a sounding board for technical and policy issues
- South Milwaukee Health Department – for willingness to learn, cooperative actions and taking the lead on health department response