

Everything you ever  
wanted to know  
about the VRP and  
Brownfields but were  
afraid to ask...

Well may be not  
everything...but  
you can ask...

# **Virginia Department of Environmental Quality**



**Office of Remediation Programs**

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**Brownfield Program Manager**

**August 2009**

# "Brownfield"

- "Brownfield" means real property; the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. – Virginia Code

# § 10.1-1231. Brownfield Restoration and Land Renewal Policy and Programs.

- It shall be the policy of the Commonwealth to encourage remediation and restoration of brownfields by removing barriers and providing incentives and assistance whenever possible. The Department of Environmental Quality and the Economic Development Partnership and other appropriate agencies shall establish policies and programs to implement these policies, including a Voluntary Remediation Program, the Brownfields Restoration and Redevelopment Fund, and other measures as may be appropriate.
- (2002, c. [378](#).)

# Virginia's Voluntary Remediation Program

- Voluntary program in which owners/operator or others can enroll a property to remediate
- These sites cannot be subject to other environmental programs such as RCRA, Superfund, Enforcement Actions, etc
- Participants voluntarily enroll and can *withdraw* from the VRP
- VRP handles a wide variety of brownfield sites
- VRP allows the use in engineering and institutional controls to mitigate risk
- Participants may proffer Deed Restrictions to future use

# The Sellers Dilemma

- Limited regulatory understanding
- Sellers frequently assume they're in trouble:
  - “What I don't know, I don't have to tell”
  - “But, if I don't tell, it'll never sell”
  - “And once DEQ finds out.....forget it!!”
- DEQ has limited understanding of the Developer's needs
- The result:
  - sites remain mothballed
  - eager developers can't find sites to reuse
  - brownfield redevelopment stifled

# The Solution - Amnesty from Civil Penalties

- Component of state brownfield legislation  
Amnesty from civil penalties &  
administrative fines for voluntary  
disclosure of brownfield sites
  - not amnesty from potential cleanup
    - customer has a due care requirement, if necessary



# The Solution - Limitations on Liability

- Tracks federal legislation to limit liability:
  - bona-fide prospective purchaser
  - innocent land owner
  - contiguous property owner
  - involuntary acquisition by a governmental entity
    - affirmative defenses
  - Director's Determination
    - case decision
- Eligibility is self assessing
- If eligible, comfort letter issued
- RCRA and NPL sites excluded by law

# All Appropriate Inquiry

- **EPA Recognizes Two ASTM Standards as Compliant with All Appropriate Inquiries**
- ASTM International's E1527-05 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process"
- ASTM E2247-08 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland and Rural Property"
- AAI Fact Sheet:  
<http://www.epa.gov/brownfields/aai/aaicerclafs.pdf>

# Easy Process...

## Practical, Predictable, & Timely

- Buyers and sellers self determine eligibility using DEQ's Brownfields Manual
- Contact DEQ Brownfield Coordinator to discuss
  - has no regulatory authority
  - provides information and assistance
  - “safe” to talk to about projects
  - helps facilitate deals
- DEQ reviews available site information
- If eligible, DEQ issues comfort letters
  - Averaging 2 week turn around
- If necessary, site is enrolled at DEQ for cleanup
- Site is cleaned up and redeveloped

# Brownfield restoration and land renewal policy and programs

- It shall be the policy of the Commonwealth to encourage remediation and restoration of brownfields by removing barriers and providing incentives and assistance whenever possible. The Department of Environmental Quality and the Economic Development Partnership and other appropriate agencies shall establish policies and programs to implement these policies, including a Voluntary Remediation Program, the Brownfields Restoration and Redevelopment Fund, and other measures as may be appropriate.

# Immunity for voluntarily disclosure

- any person making a voluntary disclosure of information to a state or local regulatory agency regarding a violation of an environmental statute, regulation, permit or administrative order shall be accorded immunity from administrative or civil penalty under such statute, regulation, permit or administrative order.

# Eligibility

- Types of sites not eligible
  - National Priorities List
  - Site should have held or is holding a permit or interim status under Hazardous Waste Regulations - RCRA
  - Landfill eligibility is complex and are handled on a case by case basis depending upon operational timeframe, current status, whether it is permitted, etc
  - Petroleum releases subject to Water Control Law
  - Imminent and Substantial threat
  - Subject of Local, state or federal response action

# Eligibility

- VRP is appropriate when it is not clear that:
  - Release involved is a waste or virgin material/product
  - Release occurred after relevant regulations became effective
  - The release occurred at regulated unit
  - Sites are eligible for the VRP where ***“remediation has not been clearly mandated”***

# VRP Statutory Authority

- 1995 -Article 4.1 of the Virginia Waste Management Act, Va. Code § 10.1-1429 *et seq.*
- VRP Regulations 9 VAC 20-160-10 *et seq.*, 13 Va. Reg. 2234 (May 26, 1997)
- VRP Regulations are currently undergoing review and revision



# Voluntary Remediation Program

- Non-enforcement based cleanup program that provides volunteer participants the framework to characterize the site, assess risk, remediate if necessary and close the site.
- Formal mechanism for DEQ oversight and acceptance of voluntary remediation activities at contaminated sites
- Designed to final agency action

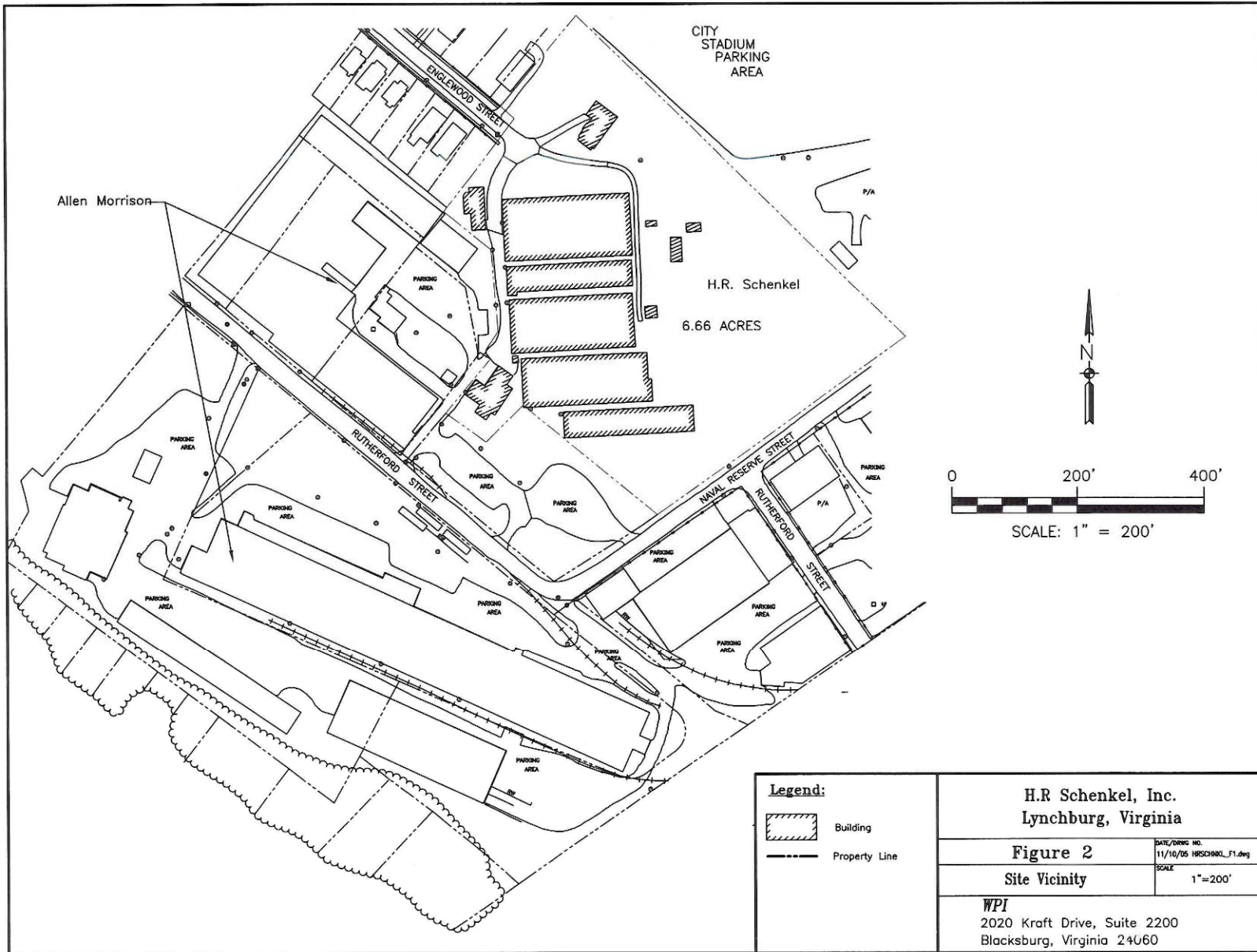
# Economically Driven or Driven by Resolution of Liability

- Projects tend to be in areas where property has significant value
- Cleaning up under valued property and adding value by reaching closure
- Property owners in areas with low property values may not have an economic incentive to undertake cleanup
- Corporations have used the program to complete cleanup and to eliminate outstanding environmental liabilities
- Property in economically challenged areas of the state are not being enrolled

# Typical VRP Sites

- Pre-1980 release(s)
- Non-NPL CERCLIS sites
- Manufacturing/production sites
- Contamination from unknown source(s)
- Dry Cleaning establishments





# VRP Statistics

- Approximately 350 sites enrolled
- 187 sites have received a Certificate for closure
- Timeframe for evaluation and closure is often over 1 to 3 years and some sites have taken years

# Candidates for VRP Eligibility

- Eligibility
  - Property owner or permission of the owner
  - Willing to enter VRP
  - Willing to pay for assessment/remediation
  - Eligible Property

# Type of Sites Enrolled into the VRP

- Drycleaners & shopping malls
- Manufacturing facilities
- “Dumps”
- MGP or coal gasification facilities
- Former greenhouses
- Rail yards and former rail facilities and lines
- Off site sources
- Historic (pre-regulation) improper disposal or unknown sources
- Former tanneries
- “Junkyards”



# VRP Process

- Eligibility Determination
- Enrollment
- Site Characterization Documentation
- Risk Assessment
- *Decision Point – is active remediation needed? Or can institutional controls or engineering controls mitigate the contamination?*
- Public Notice
- Certification of Satisfactory Completion

# Risk

- Generated by exposure
- Not Perception
- Everyday exposures

# Risk Assessment

- Based on Superfund Guidance with caveats and elimination of exposure pathways
- Default Assumption is residential
  - Groundwater will be consumed
  - Soils will be ingested by children
- Assessment includes both current and future uses
  - Future construction events
  - Utility construction/repair

# VRP Screening Tables

## EPA Regional Screening Levels

- <http://www.deq.state.va.us/vrprisk/tables.html>
- VRP tables
- <http://www.epa.gov/reg3hwmd/risk/human/index.htm>
- EPA tables which are the foundation for much of the VRP tables
- Other pathways must be assessed, evaluated for risk and either eliminated based on risk or eliminated based on remediation, ICs or ECs

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; H = HEAST; W = WHO; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; c = cancer; \* = where n SL < 100X c SL; \*\* = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAP-1

Contaminant	CAS No.	Toxicity and Chemical-specific Information										Screening Levels							Protection of Groundwater	
		SFO (mg/kg-day) <sup>1</sup>	IUR (ug/m <sup>3</sup> -day)	RfD (mg/kg-day)	RCI (mg/m <sup>3</sup> )	Q <sub>1</sub> (mg/kg-day)	Q <sub>2</sub> (mg/kg-day)	RAGS Part E ABS	RAGS Part E GABS	Csat (mg/kg)	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Residential Air (ug/m <sup>3</sup> )	Industrial Air (ug/m <sup>3</sup> )	Tapwater (ug/L)	MCL (ug/L)	Risk-based SSL (mg/kg)	MCL-based SSL (mg/kg)		
Analyte																				
Asphalt	30550-19-1	8.7E-03		4.0E-03				1	0.1											
Asphalt	75-07-0									1.1E+05										
Asphalt	34255-92-1		2.2E-06																	
Asphalt	67-64-1			9.0E-01	3.1E+01	A	V			1.1E+05										
Asphalt	75-06-5			3.0E-03	6.0E-02	P	V			1.1E+05										
Asphalt	75-05-8				6.0E-02	I	V			1.3E+05										
Asphalt	98-36-2			1.0E-01						2.3E+03										
Asphalt	107-02-6			5.0E-04	2.0E-05	I	V			2.5E+04										
Asphalt	75-06-1	4.5E+00	1.3E-03	2.0E-04																
Asphalt	75-10-7			5.0E-01	1.0E-03	I				1	0.1									
Asphalt	107-13-1	5.4E-01	6.8E-05	1.0E-03	2.0E-03	I	V			1.1E+04										
Asphalt	111-69-3			6.0E-03		P														
Asphalt	15973-00-8	5.6E-02	C	1.0E-02																
Asphalt	1596-84-6			1.5E-01						9.2E+03										
Asphalt	116-05-3			1.0E-03						6.1E+01										
Asphalt	1646-88-4			1.0E-03						6.1E+01										
Asphalt	309-00-2	1.7E+01	4.9E-03	3.0E-05						2.9E-02										
Asphalt	74223-64-6			2.6E-01						1.5E+04										
Asphalt	107-19-6			5.0E-03	3.0E-04	P				3.1E+02										
Asphalt	107-05-1			1.0E-03	I	V				1.5E+03										
Asphalt	7429-90-6			1.0E+00	5.0E-03	P				7.7E+04										
Asphalt	20559-73-3			4.0E-04						3.1E+01										
Asphalt	67485-29-4			3.0E-04						1.8E+01										
Asphalt	834-12-8			9.0E-03						5.5E+02										
Asphalt	591-27-5			8.0E-02	P					4.9E+03										
Asphalt	123-30-8			2.0E-02	P					1.2E+03										
Asphalt	33089-61-1			2.5E-03						1.5E+02										
Asphalt	7664-41-7			1.0E-01	I					1.4E+05										
Asphalt	7790-99-9			7.0E-04						5.5E+01										
Asphalt	7773-06-0			2.0E-01						1.6E+04										
Asphalt	62-53-3	5.7E-03	I	7.0E-03	P	1.0E-03	I			8.5E+01										
Asphalt	7440-36-0			4.0E-04						3.1E+01										
Asphalt	1314-60-9			5.0E-04	H					3.9E+01										
Asphalt	11071-15-1			9.0E-04	H					7.0E+01										
Asphalt	1332-81-6			4.0E-04	H					3.1E+01										
Asphalt	1309-64-4			4.0E-04	H	2.0E-04	I			3.1E+01										
Asphalt	74115-24-5			1.3E-02						7.9E+02										
Asphalt	140-67-8	2.5E-02	I	7.1E-06	5.0E-02	H				1.9E+01										
Asphalt	7440-39-2	1.5E+00	I	4.3E-03	3.0E-04	C				3.9E+01										
Asphalt	7764-42-1			5.0E-05	I					7.1E+04										
Asphalt	76578-14-8			9.0E-03						5.5E+02										
Asphalt	3337-71-1			5.0E-02						3.1E+03										
Asphalt	1912-24-9	2.3E-01	C	3.8E-02						2.1E+00										
Asphalt	65195-55-3			4.0E-04						2.4E+01										
Asphalt	103-33-3	1.1E-01	I	3.1E-05	I					4.9E+00										
Asphalt	7440-39-3			2.0E-01	5.0E-04	H				1.5E+04										
Asphalt	114-26-1			4.0E-03						2.4E+02										
Asphalt	43121-43-3			3.0E-02						1.8E+03										
Asphalt	68359-37-5			2.5E-02						1.5E+03										
Asphalt	1861-40-1			3.0E-01						1.6E+04										
Asphalt	17804-35-2			5.0E-02						3.1E+03										
Asphalt	25057-89-0			3.0E-02						1.8E+03										
Asphalt	100-52-7			1.0E-01						7.8E+03										
Asphalt	71-43-2	5.5E-02	I	7.8E-06	3.0E-02	I	V			1.4E+03										
Asphalt	105-99-5			1.0E-05	H					7.5E+01										
Asphalt	92-87-5	2.3E+02	I	6.7E-02	3.0E-03					5.0E-04										
Asphalt	65-95-0			4.0E+00						2.4E+05										
Asphalt	98-07-7	1.3E+01	I							4.9E-02										
Asphalt	100-61-6			5.0E-01	P					3.1E+04										
Asphalt	100-44-7	1.7E-01	I	2.0E-03	P	1.0E-03	P	V		6.4E+01										
Asphalt	7440-41-7		2.4E-03	2.0E-03	2.0E-05	I				1.6E+02										
Asphalt	141-66-2			1.0E-04						6.1E+00										
Asphalt	42875-02-3			9.0E-03	P					5.5E+02										

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# Exposure Pathways

- VRP has list of on and off site exposure pathways which must be excluded
- <http://www.deq.state.va.us/vrprisk/tables.html> - Tables 3.1a & 3.1b
- Vapor intrusion is just one of the pathways
- Other pathways must be assessed, evaluated for risk and either eliminated based on risk or eliminated based on remediation, ICs or ECs

# Remediation Levels

- TIER 1
  - Natural Background
- TIER 2
  - Screening Values
    - Maximum Contaminant Levels (MCLs)
    - Soil Screening Levels (SSL)
    - Risk Based Concentration Levels ( RBC)
- TIER 3
  - Site Specific Risk Assessment

# Certification of Satisfactory Completion

- Certificate constitutes immunity to enforcement action under state law
- Immunity limited to site conditions at time of issuance
- Secures future site use limitation by placing restrictions on deed
- Certificate “runs with the land”



# Memorandum of Agreement (MOA)

- VDEQ & USEPA in place
- MOA will establish concurrence by USEPA that closure under VRP constitutes satisfaction of USEPA interest
- Enrollment in the VRP meets “appropriate care” requirements as part of BFPP status

# End Use of Sites

- Industrial sites being converted into residential
- Shopping malls remaining as shopping malls often refinanced, remodeled, or sold
- High end office space (ex. US Patent and Trade Office building)
- Recreational facilities such as soccer fields

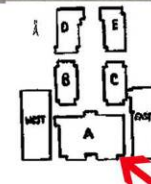
# Success Stories

# US Patent and Trade Office



US Patent & Trademark Office  
LCOR-Alexandria, LLC  
Skidmore, Owings & Merrill, LLP  
Turner Construction Company

Fine Art Photography, Inc.  
301-460-7977  
August 3, 2004  
View: 19-SE corner of Bldg. A-2, Atrium & A-1 looking  
NW from Eisenhower Ave.



# Danville's Historic Tobacco Warehouse District





# Carilion Hospital Complex Roanoke Memorial Hospital



"Small opportunities are often the beginning of great enterprises"

Demosthenes (384 BC - 322 BC)

# Auto Recyclers LLC

- Former Buena Vista factory abandoned for 20 years
- Completed VRP and purchase completed
- Virginia Chamber's Vanguard Award – 5<sup>th</sup> Fastest Growing Company
- Metal Recycling under roof
- Rockbridge may soon have one of the highest recycling Rates in Virginia



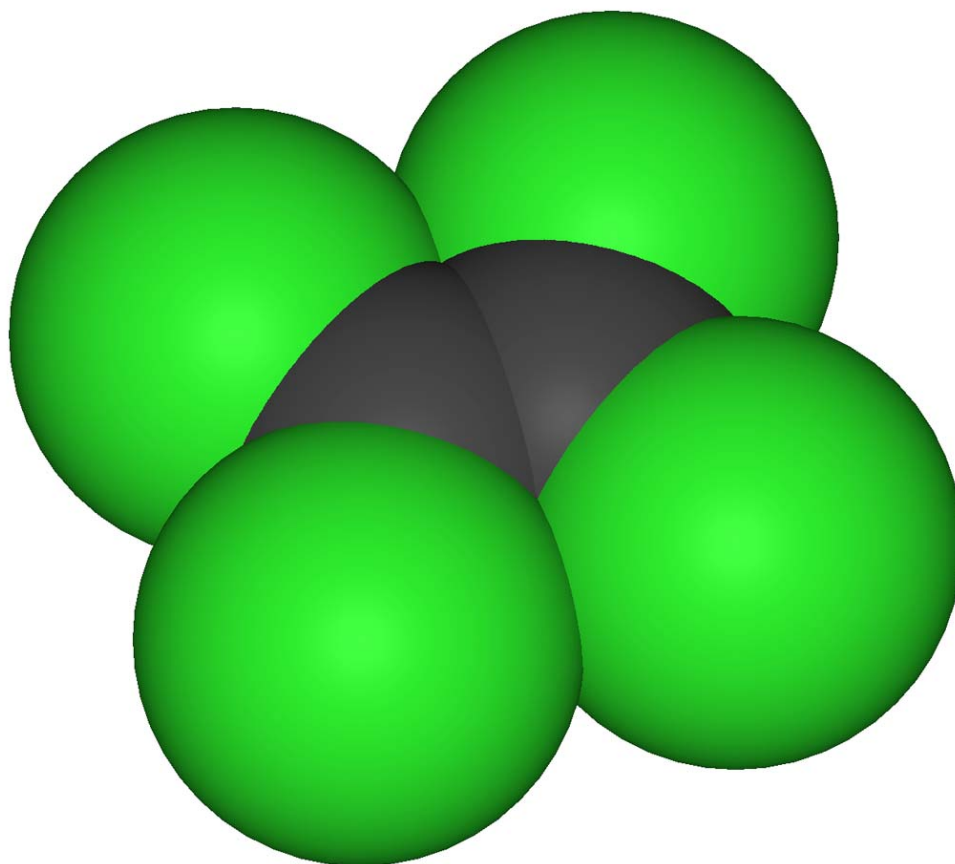
# Auto Recyclers – Buena Vista



That's All  
Folks

# Drycleaners

# Perchloroethylene







**Portland, Maine – September 2007**





**Richmond, Virginia – January 2008**

# Perky Facts

- Know as PERC or PCE
- $\text{C}_2\text{Cl}_4$
- Denser than water – 13.5 lbs/gallon which means it's a DNAPL or a sinker (which complicates cleanup)
- First synthesized in 1821
- Used for hookworm
- 80+ years of commercial usage
- 25+ years of concern regarding toxicity
- MCL is 5 ppb
- 310 million pounds produced in 1991 but demand is steadily declining
- Odors can be detected at 1 ppm
- Non-flammable (advantage over petroleum based cleaners)
- Coin operated drycleaners machines used to be seen in some laundry mats

# Drycleaner Remediation Background

- Virginia & drycleaner remediation – nearly all sites are handled by VRP
- 43% of our open cases are dry cleaner sites and the percent continues to increase
- Most are located in strip malls with surrounding property to allow for a “buffer” and land use controls
- Many of the malls are undergoing revitalization, sales, or refinancing



# Typical Drycleaner Participant

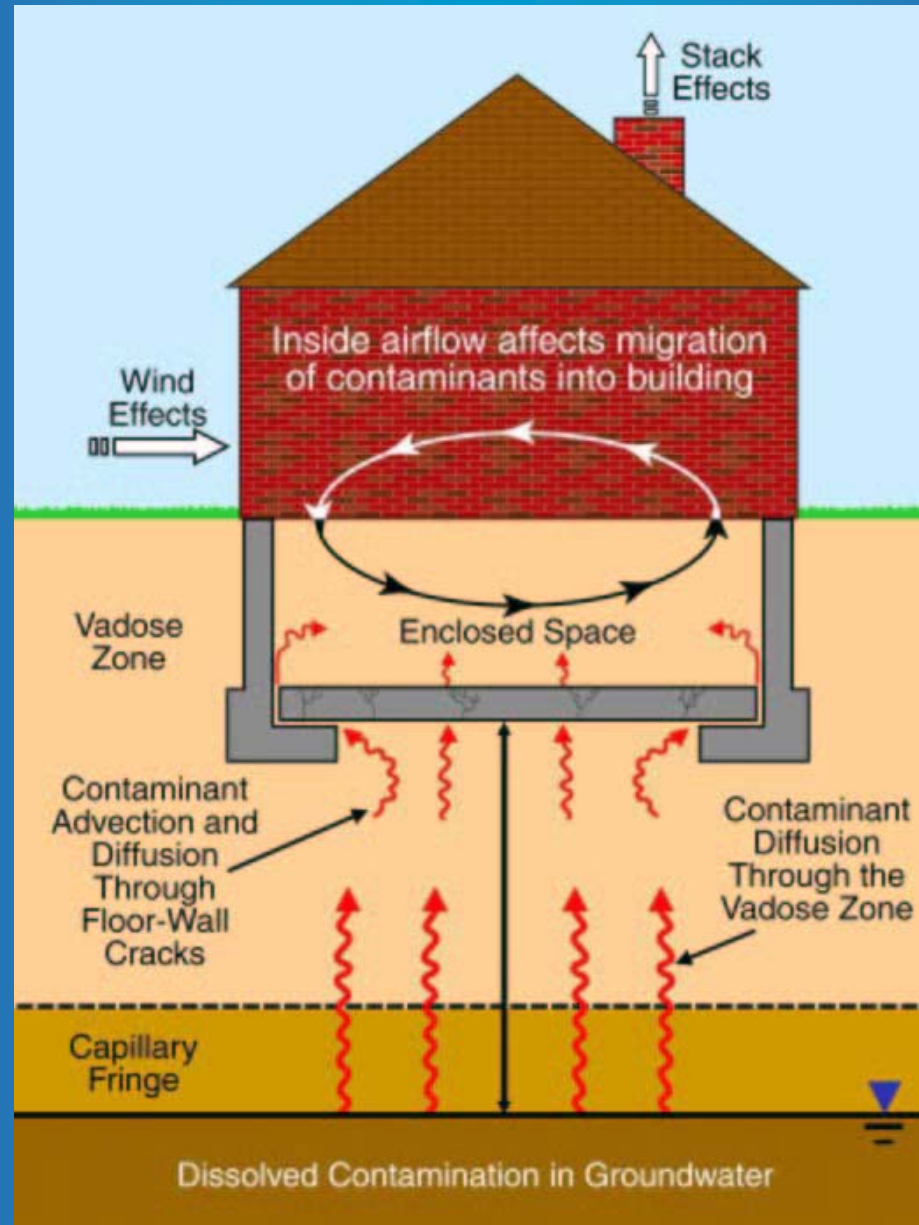
- Property owner enrolling the site
- Drycleaner has typically changed hands several times and the business owner is not the property owner complicating matters
- Northern Virginia, Tidewater, Richmond, Roanoke and Charlottesville are the locations of the bulk of the sites
- Again, the economics are not there which would provide incentive to enroll and remediation
- The “postal stamp” properties in the older towns are very difficult to evaluation and remediation compared to the strip malls
- This puts the “small town” drycleaner in a difficult position when it comes to enrolling into the VRP

# The “New” Issue – Vapor Intrusion

## It's the fault of groundwater

- Vapor intrusion has become an increasing concern for numerous reasons
- Tetrachloroethene or perchloroethylene is the most common drycleaning solvent and it and the daughter breakdown products are the primary COC issues at these sites
- VRP is requiring evaluation for vapor intrusion at all drycleaner sites
- VRP preferred sampling method for potential VI is subslab sampling with summa canisters
- Avoid sampling vapors within structures

# The “Classic” Intrusion Schematic



# State Coalition for Remediation of Drycleaners

- 13 Coalition members have dedicated drycleaner programs with cleanup funds similar to the Petroleum Program
- Virginia is one of six “represented” states of SCRD with programs which oversee drycleaner remediation however Virginia does NOT have established a dry cleaner program & fund as the
- Therefore all costs are borne by the participant
- VRP handles nearly all drycleaner remediation in Virginia
- <http://www.drycleancoalition.org/>