



# PCE SOUTHEAST / PCE/TCE NORTHEAST CONTAMINATION SITE'S

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# ACRONYMS

## **PCE (Tetrachloroethene):**

- A man-made chemical that is widely used for dry cleaning clothes
- It evaporates easily into the air
- a colorless liquid with a mild, chloroform-like odor - has a sharp, sweet odor

## **TCE (Trichloroethene):**

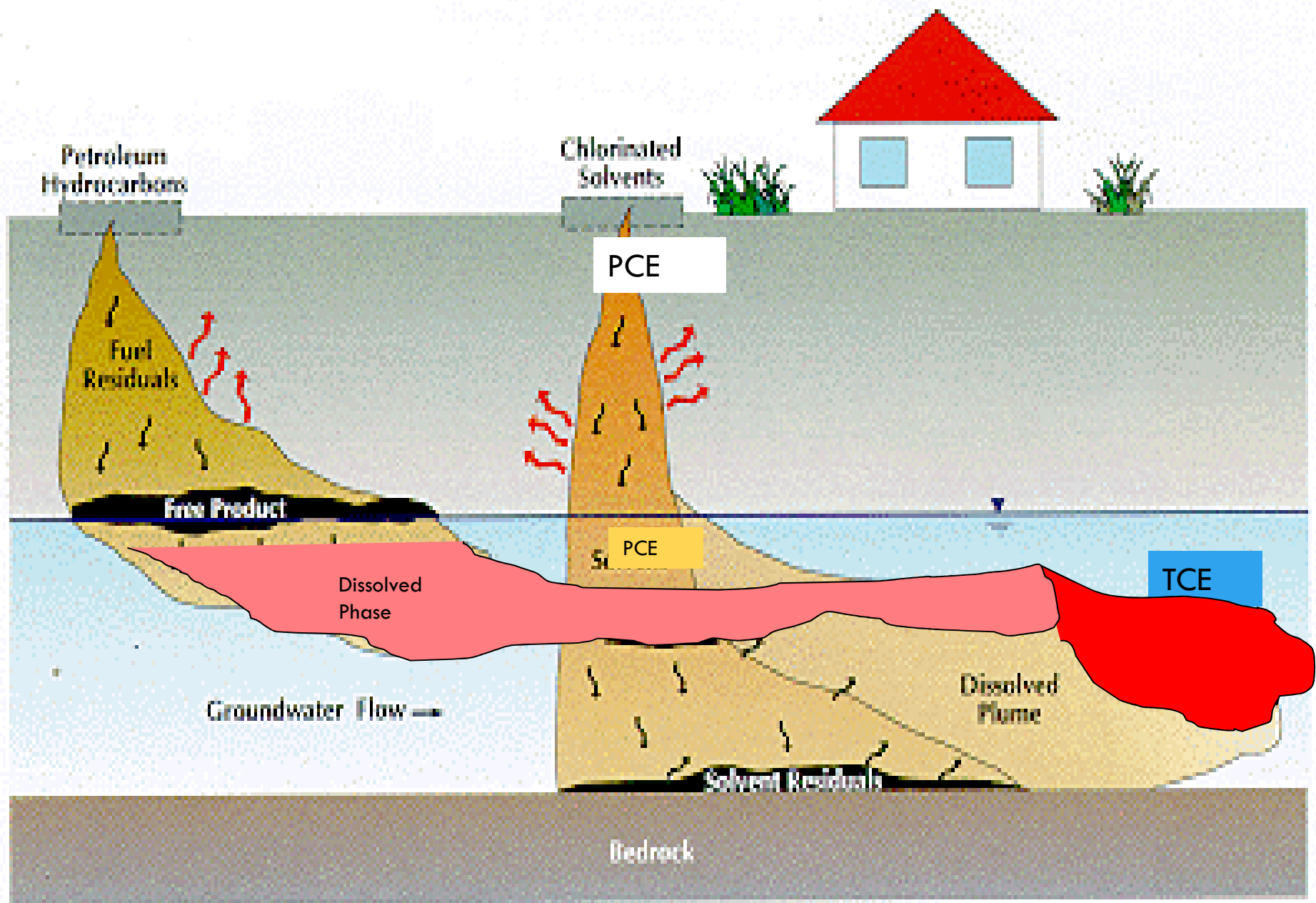
- Remove grease from fabricated metal parts and in the production of some textiles.
- PCE degrades to TCE under certain circumstances
- A colorless or blue liquid with a chloroform-like odor - has a sharp, sweet odor

## **CCL<sub>4</sub> (Carbon Tetrachloride)**

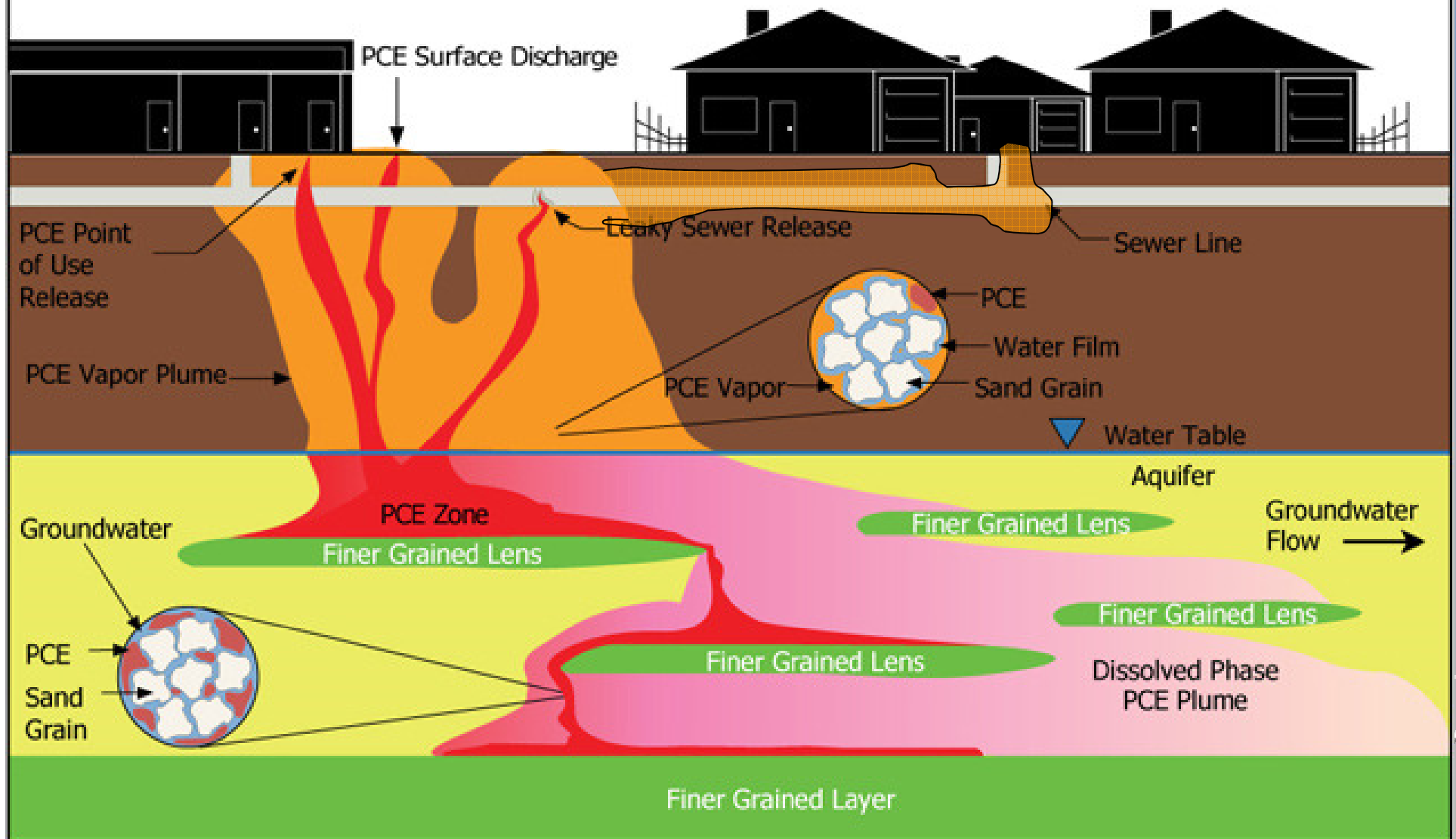
- used as a fumigant for insecticides in grain elevators
- a clear heavy organic liquid with a sweet aromatic odor similar to chloroform

For more information about these chemicals go to:

**<http://water.epa.gov/drink/contaminants/basicinformation/>**



# The PCE Challenge



# HEALTH EFFECTS

Cancer Risk for PCE and TCE  
is classified by EPA as “likely to be carcinogenic” to humans.

## Maximum Contaminant Levels (MCL)

Drinking Water – 5 ug/L

Vapor Intrusion

	Screening Levels		Removal Action Levels	
	Sub slab		Indoor Air	
	PCE $\mu\text{g}/\text{m}^3$	TCE $\mu\text{g}/\text{m}^3$	PCE $\mu\text{g}/\text{m}^3$	TCE $\mu\text{g}/\text{m}^3$
Residential	1,400	70	42	2.1
Industrial	6,000	293	180	8.8
$\mu\text{g}/\text{m}^3$ = microgram per cubic meter				

## SITE HISTORY

- 1990: NDEQ discovered TCE in some of York's municipal wells.
  - NDEQ sampled 20 private water wells in Northeast section of York
  - NDEQ found 8 wells with TCE above MCLs
- USDA found  $\text{CCL}_4$  in Northeast section of York during groundwater sampling in 1993 and 1994
- 2009 NDEQ discovered TCE in 3 residential wells in the Northeast above MCLs
- Residences with contaminants in their well above MCLs were hooked to city water
- 2010 EPA collected groundwater samples in the Northeast section of York
- During groundwater sampling by EPA in the Northeast section of York a PCE groundwater plume was discovered in Southeast section of York



# Map of Contamination Plumes that EPA is working on

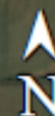
## Legend

- TCE and PCE
- York PCE

PCE/TCE Northeast Contamination

PCE Southeast Contamination

Google earth



1 mi

## REMOVAL ACTION

- Collect water samples from private drinking water wells
  - Provide alternate drinking water to those with PCE and/or TCE contamination in their well
- Collect groundwater and soil samples to determine the extent of the contamination and locate source areas
- Collect soil gas samples in properties in the form of sub slab and indoor air samples
  - Install vapor mitigation systems in residential homes and businesses where PCE and/or TCE exceed the removal action levels for soil gas contaminants



## **Private Drinking Water Well Sampling to Date**

- Approximately 185 drinking water samples have been collected
- Approximately 31 drinking water wells have been disconnected and city water has been hooked up to residence
- Approximately 6 whole house filter have been installed in residences

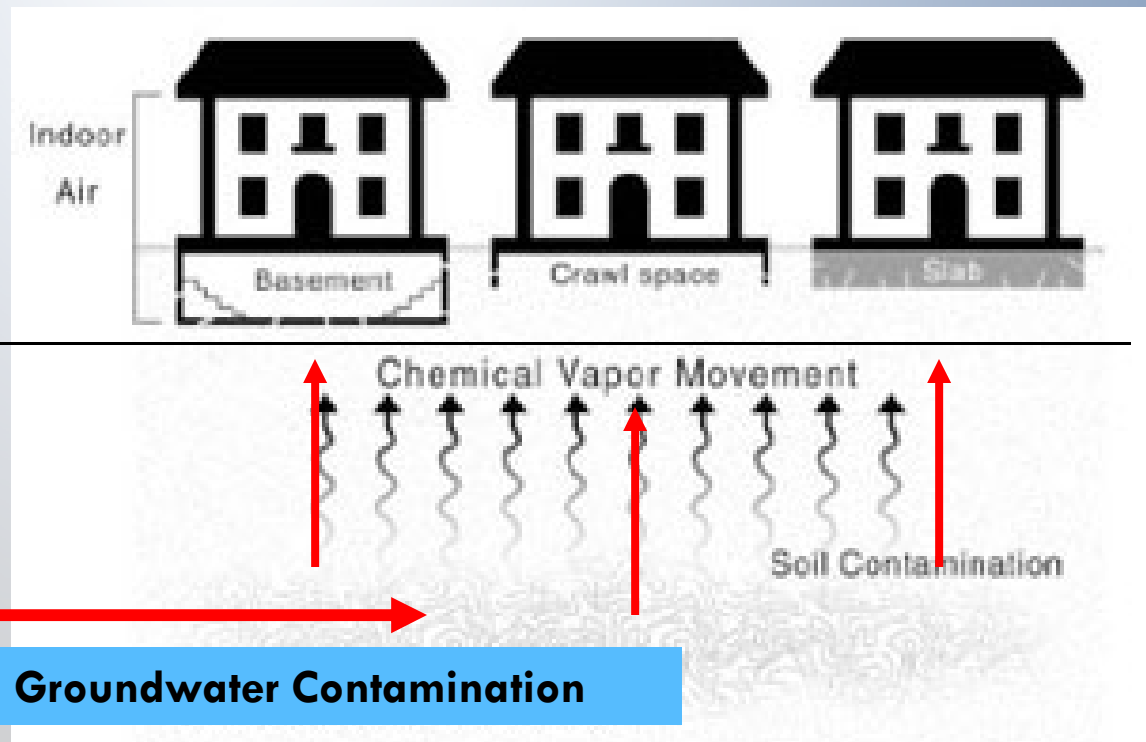
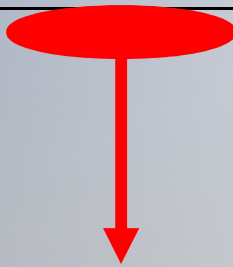
## **Future Private Drinking Water Well Sampling**

- Resample private drinking water wells in the area of the plumes
- Additional wells over the MCLs hook up to city water or install whole house filters



# WHAT IS VAPOR INTRUSION?

**Chemical Spill-PCE**



**Must Connect GW, SG, SS, IA**



## SUB SLAB AND INDOOR AIR SAMPLING







# VAPOR ABATEMENT SYSTEM INSTALLATION

## EXTRACTION PIPE INTO SLAB



**Based on radius of influence testing, multiple extraction points may be necessary**  
**Note: Looking for entire slab to be under vacuum**



# VAPOR ABATEMENT SYSTEM INSTALLATION OUTSIDE FAN AND VENT



**Per local code, vent above highest window**

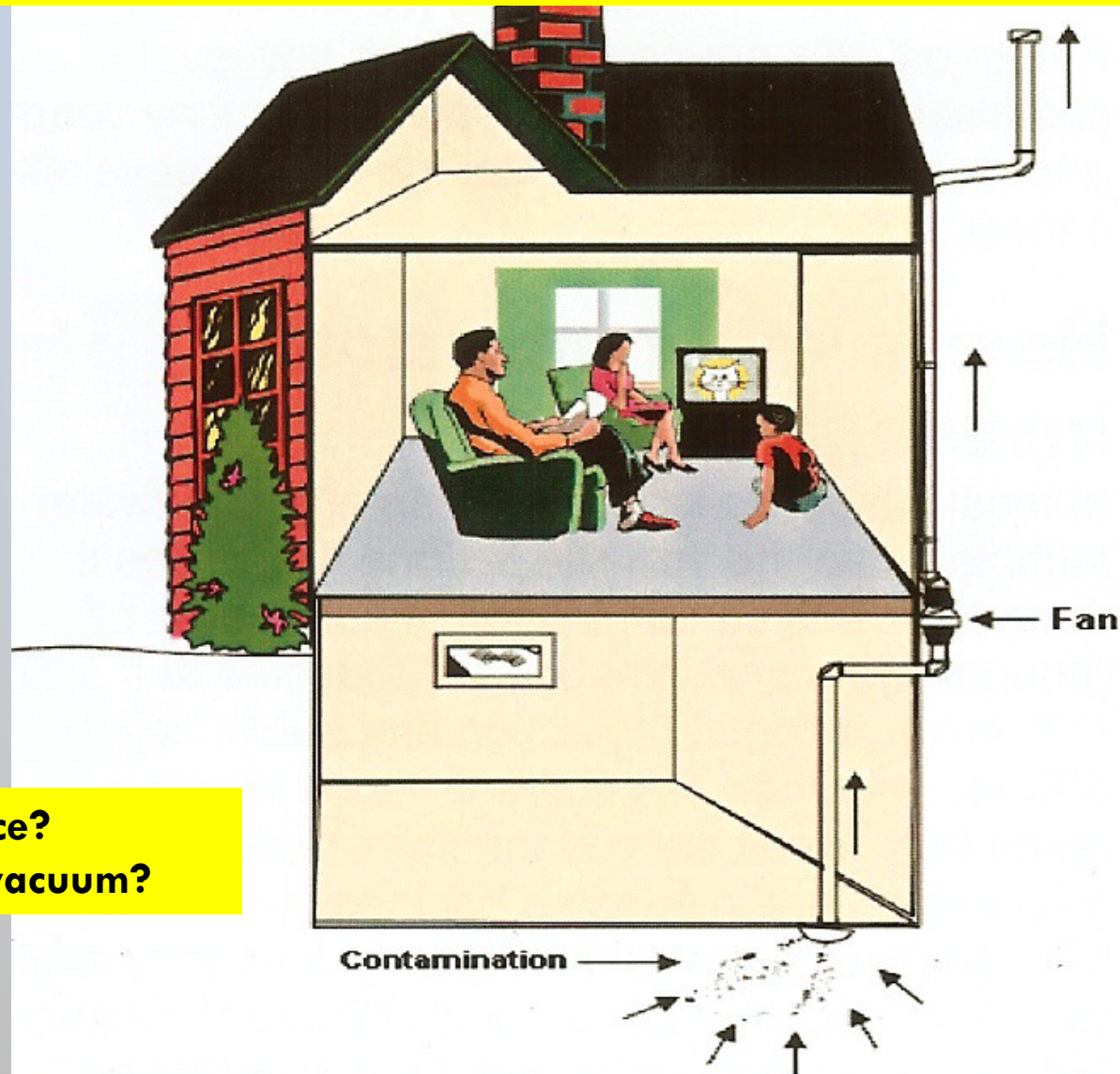






# Vapor Abatement Mitigation System

(Sub-Slab Depressurization System or SSDS)



Radius of Influence?  
Least amount of vacuum?

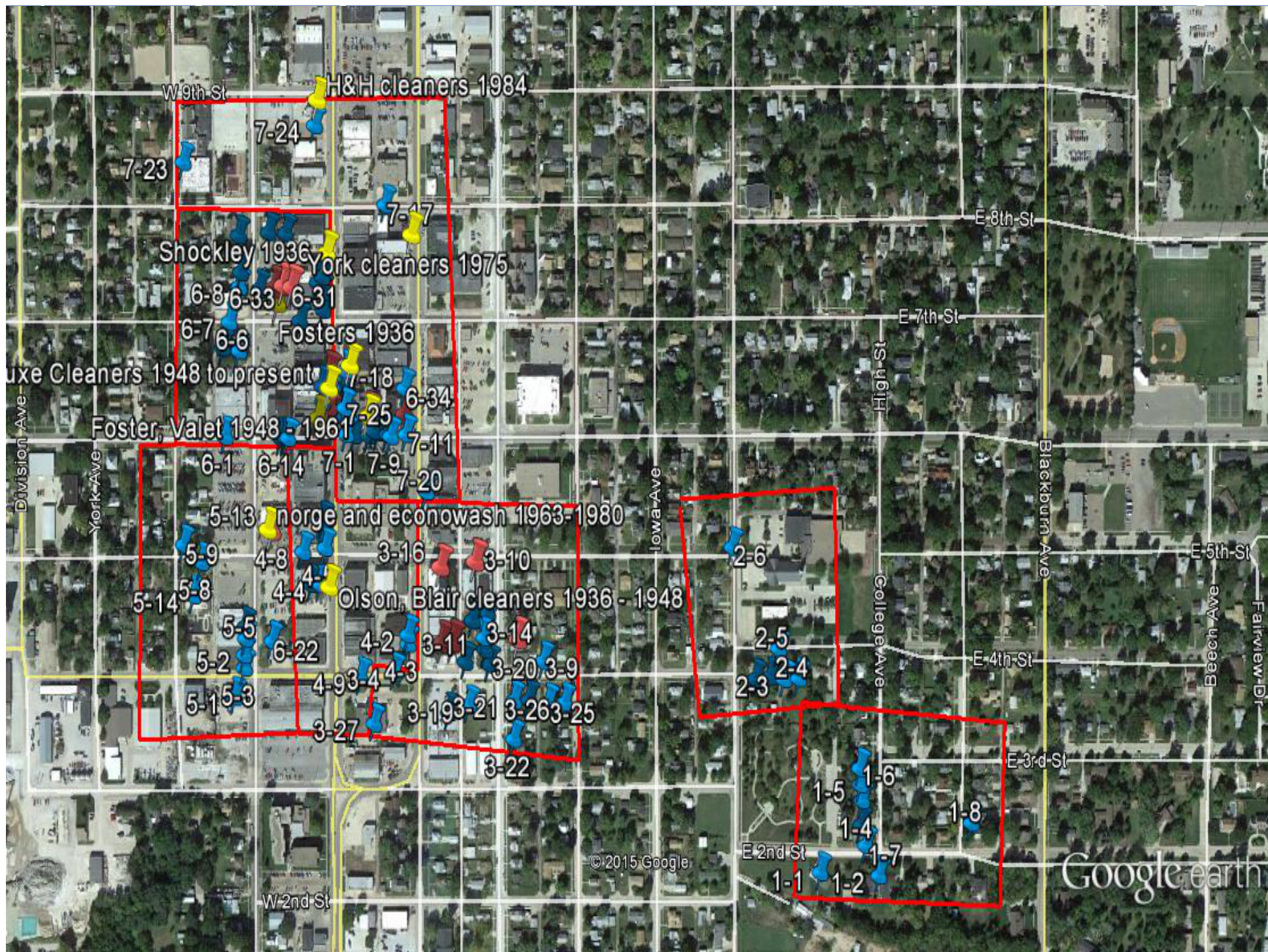
## **Vapor Intrusion Sampling to Date**

- Approximately 31 indoor air samples have been collected
- Approximately 105 sub-slab samples have been collected
- Approximately 15 vapor mitigation systems will be installed

## **Future Vapor Intrusion Sampling**

- Resample properties previously sampled for 4 quarters (properties without vapor mitigation systems).
- Additional vapor intrusion sampling in properties not previously sampled









# QUESTIONS?

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