TCE Havertown Site
Vapor Intrusion Assessment

Informational Meeting
Quatrani Building,
Commissioner's Meeting Room
Havertown, PA

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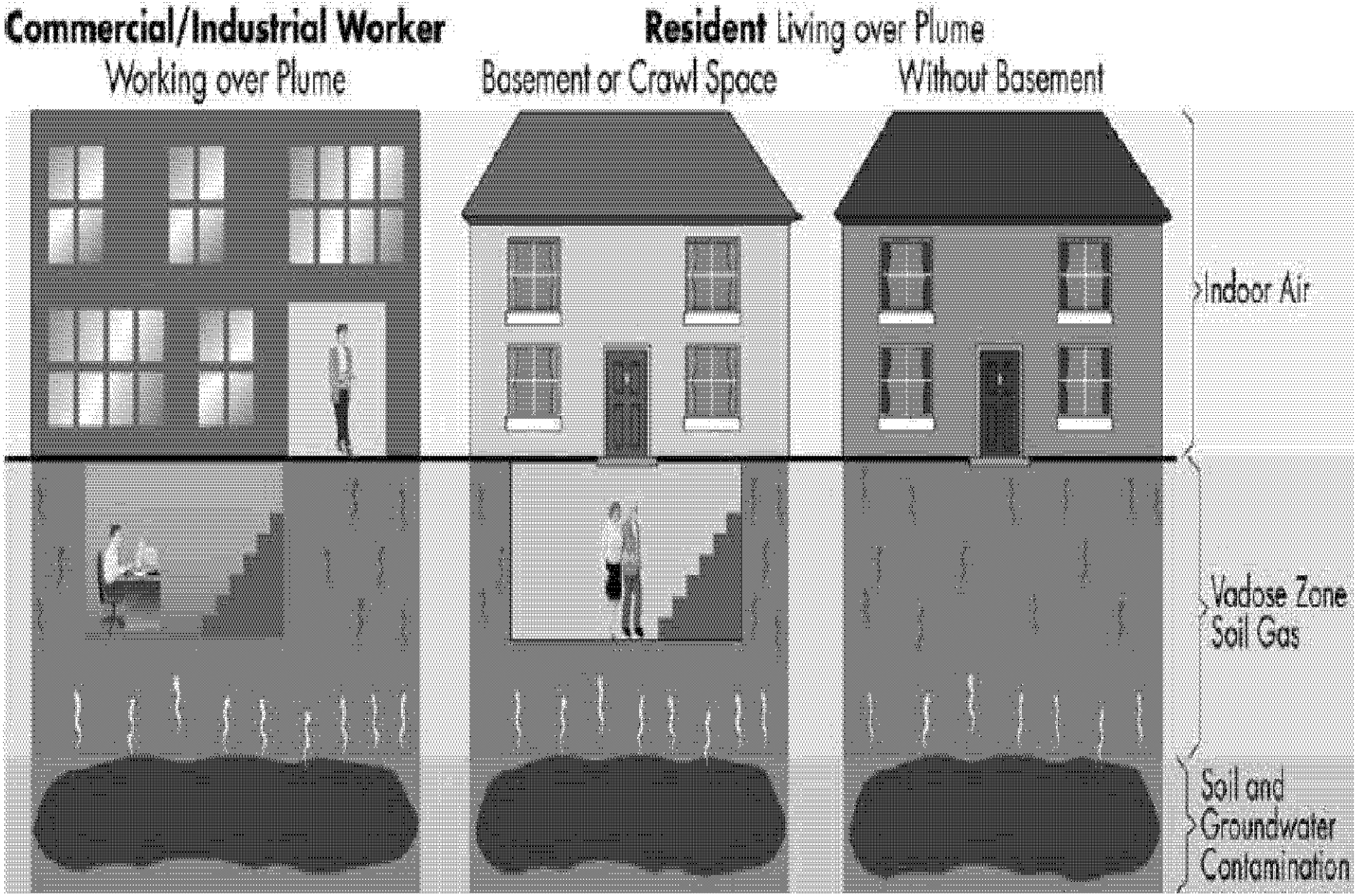
What is Vapor Intrusion?

Vapor intrusion (VI) is contaminant vapors from the subsurface seeping into overlying buildings and accumulating.


Commercial/Industrial Worker
Working over Plume
Resident Living over Plume
Basement or Crawl Space
Without Basement
Indoor Air
Vadose Zone
Soil Gas
Soil and
Groundwater
Contamination

Why is vapor intrusion a concern now and not before?

- Relatively new field of study
  - Volatile Organic Compounds (VOCs) in groundwater were viewed principally as a threat to drinking water supplies.
- New investigative methods, sampling & analytical techniques and criteria involving multiple lines of evidence.
- EPA has been following its 2002 policy for VI.

3 things needed for completed VI exposure pathway

- Source
- Migration route
- Inhabited building (receptors)

A variety of factors can influence whether VI will occur.

- Concentration of contaminants
- Type of soil
- Depth to groundwater
- Building construction
- Condition of foundation or slab
- Existence of underground utilities

How do vapors move into buildings?

- Diffusion – From high to low concentration
- Advection –From high to low pressure (most significant in area near foundation or basement)
  - atmospheric pressure changes
  - temperature changes
  - pressure changes due to building ventilation systems
- cracks in the floor of the basement
- Sumps or drainage pits or utility conduits

Other sources of vapors

- Products from household activities
  - residual volatile components of stored items
  - off-gassing from dry-cleaned materials (e.g., clothing containing residual dry-cleaning solvents)
  - cosmetics including hair spray, nail polish and nail polish remover, perfume, cologne
  - air fresheners and odor eliminators
  - insect repellents
  - cigarette smoke
  - exhaust from attached garages
  - hot shower
  - household cleaners
  - volatiles released from long-term stored chemicals or fuels
  - jewelry polish
  - off-gassing from furniture and treated wood surfaces
  - automotive parts cleaners
  - heating/cooling energy sources

Other sources of vapors – Cont.

- building materials
  - adhesives
  - adhesive removers
  - lubricants
  - bonders
  - antistatic aerosols
  - paint strippers
  - “spot removers” for fabrics
  - water repellants
  - spray paints
  - caulks and sealants
- background contaminants from ambient outdoor air

Contaminant of Concern

TCE (trichloroethylene)

- TCE is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste.
- Evaporates easily.
- Mainly used as a solvent to remove grease from metal parts.
- Ingredient in adhesives, paint removers, and spot removers.
- Does not occur naturally in the environment.
- Found in groundwater and surface waters as a result of its manufacture, use and disposal.

What are the concerns with vapor intrusion?

- Is the underground vapor getting into your home?

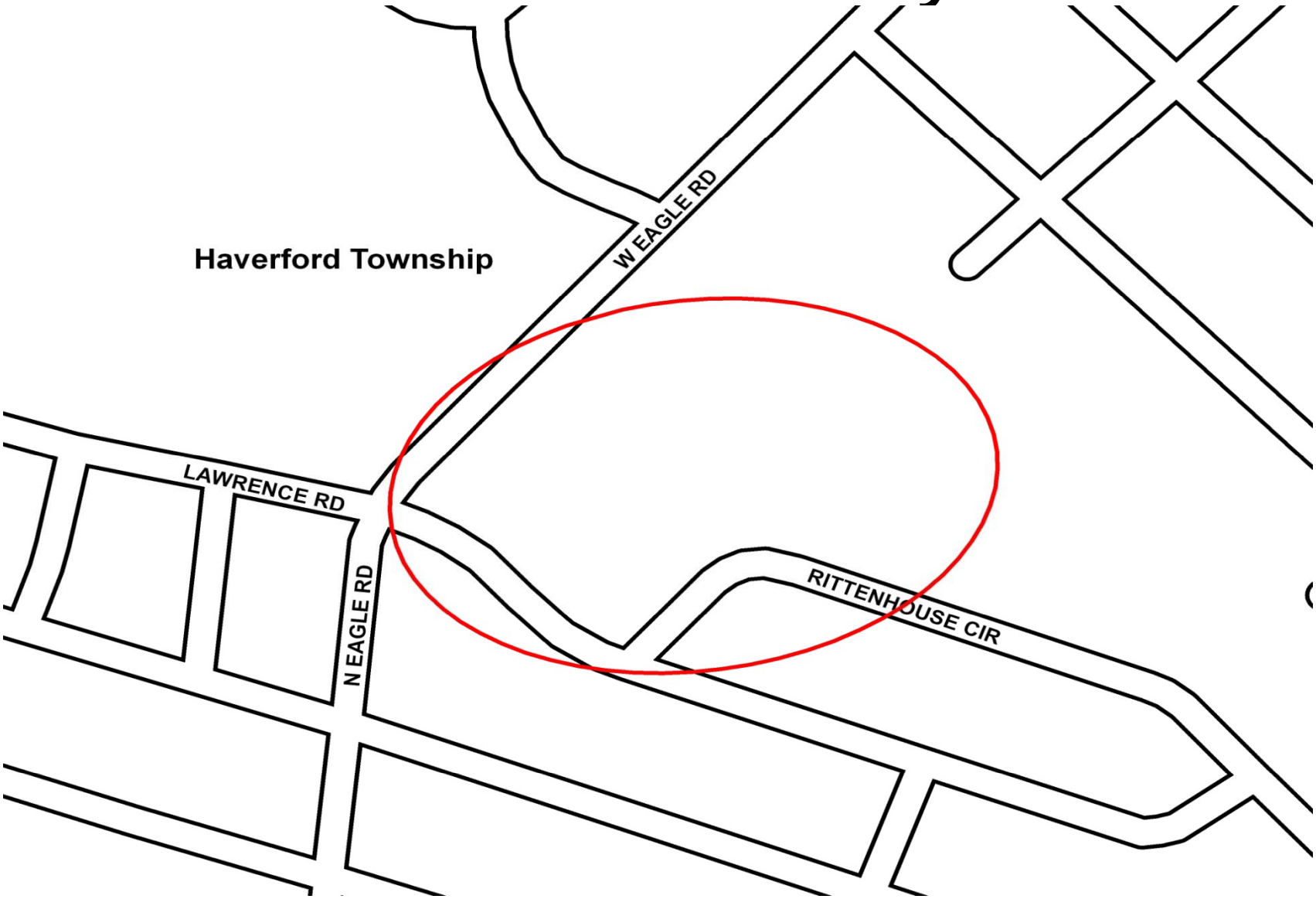
- If it is, then the main concern is whether the chemicals may pose an unacceptable risk of health effects due to long-term exposure.

How do we know if action is necessary?

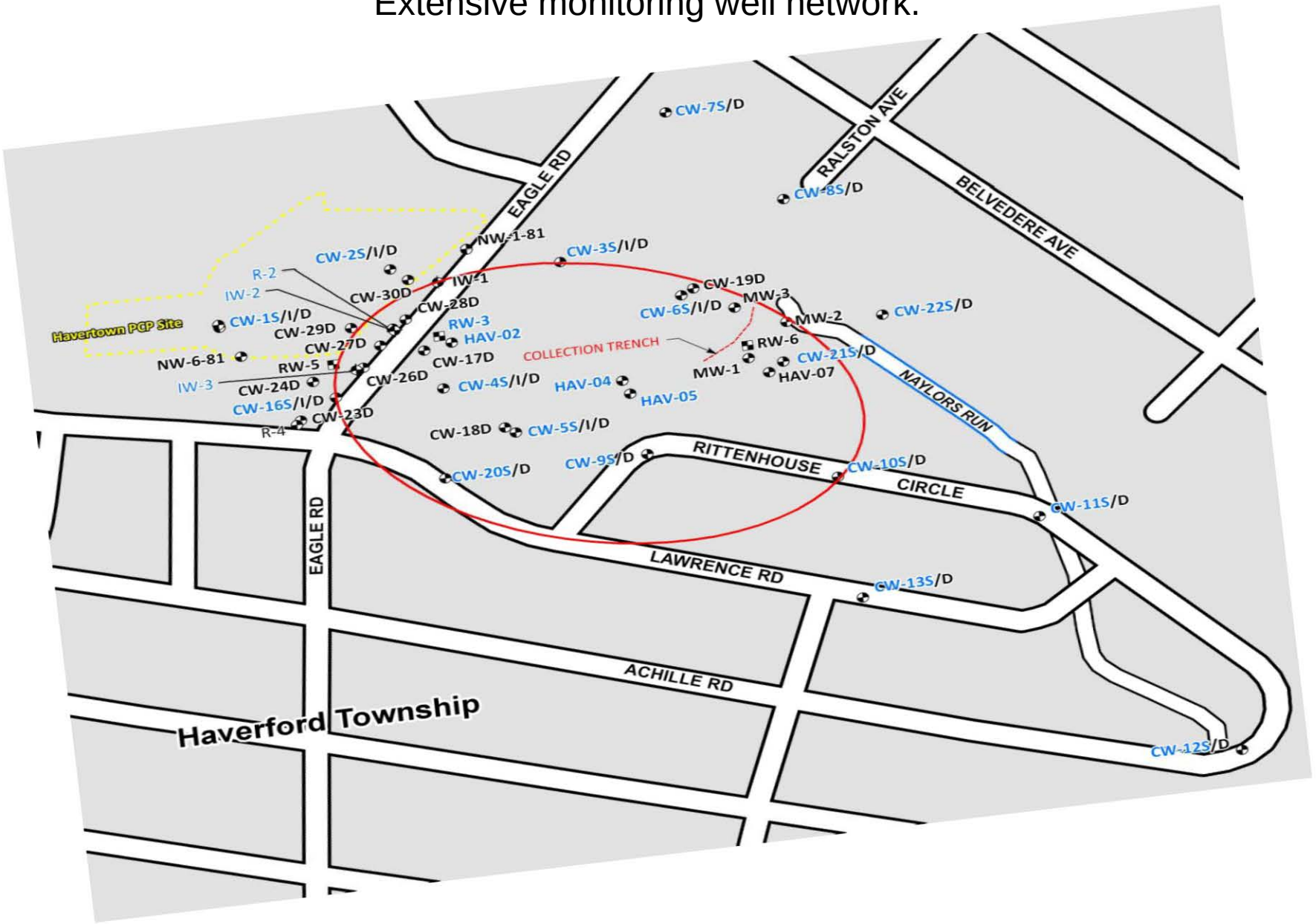
- EPA's decision to initiate an action will be based on recommendations from the Agency for Toxic Substances and Disease Registry (ATSDR) and EPA's evaluation of the each structure.

- ATSDR is a public health agency under the Center for Disease Control (CDC).

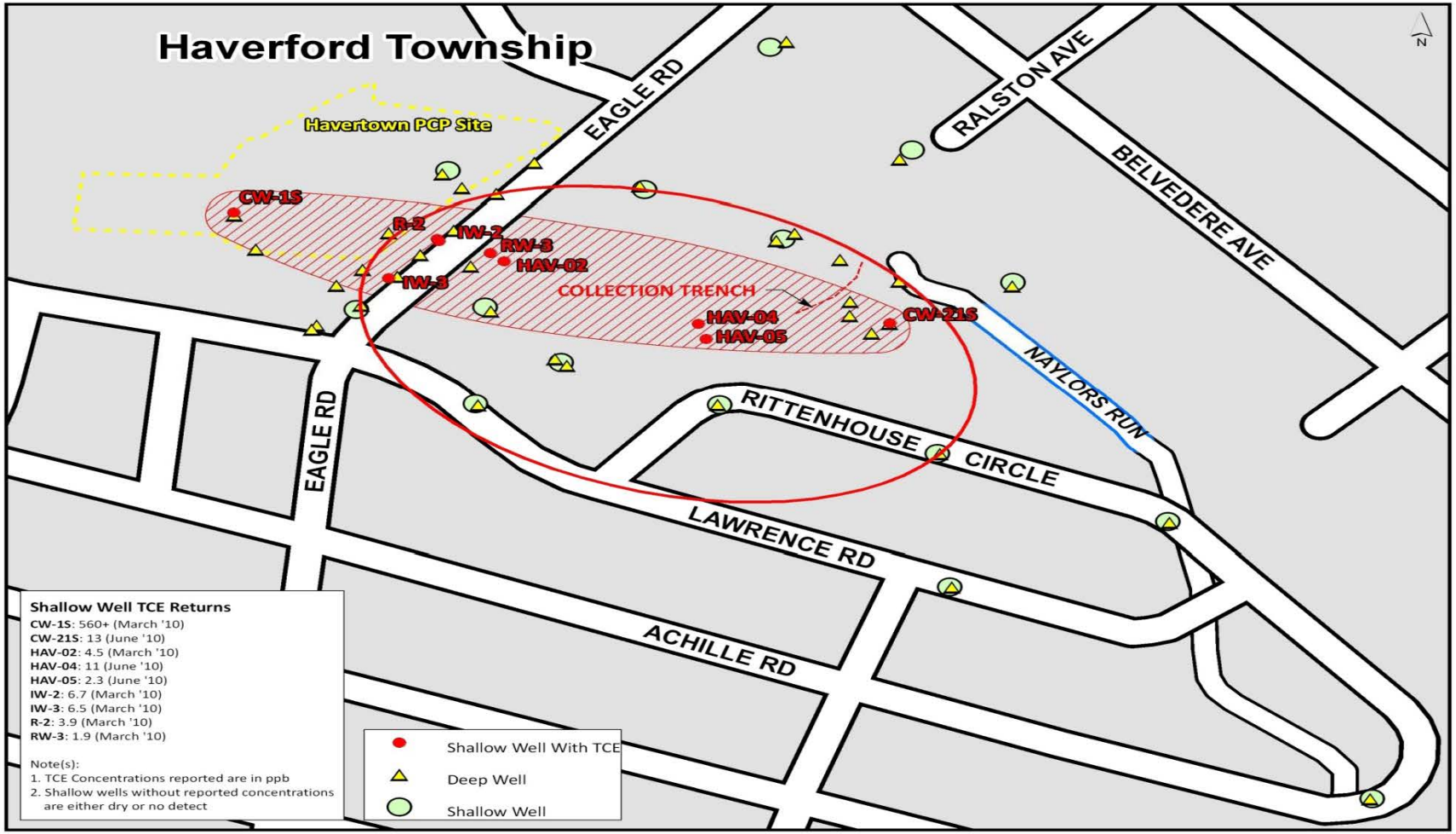
Area of study



Extensive monitoring well network.



TCE in the shallow groundwater



What to expect?

- EPA or an EPA contractor will schedule sampling with each resident.
- Duration: 3 days
  - Day 1: installation of probe and removal of potential external sources.
  - Day 2: connection of summa canisters
  - Day 3: pickup of summa canisters


DEWALT

Installed probe

Summa canister


AMBIENT
SIM
& SCM
Dielectric

What to expect? – Cont.

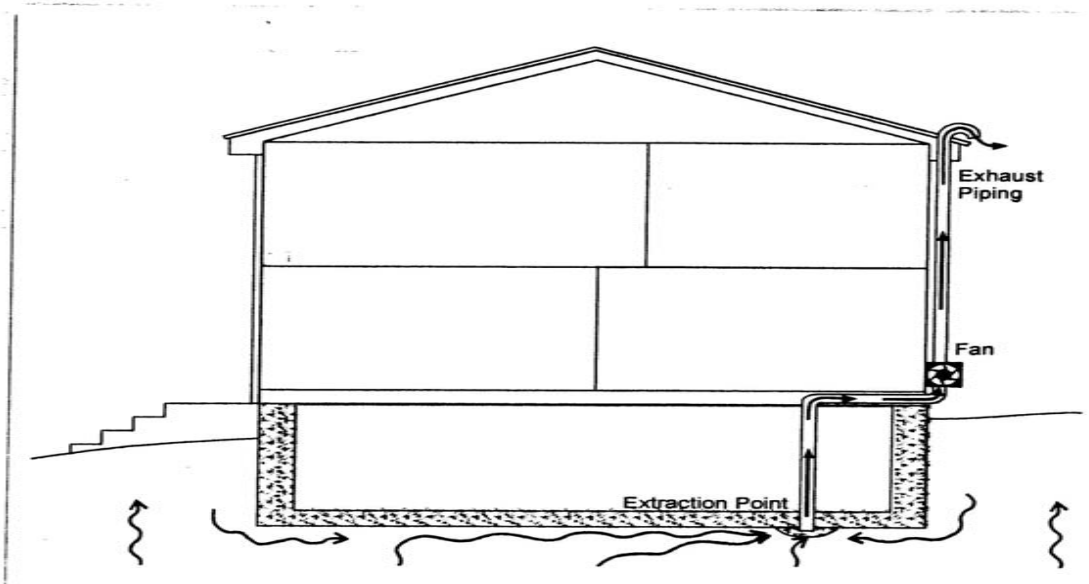
- The summa canisters will be sent to a laboratory.
- Validated results will be sent to the residents by mail along with an explanation of EPA's decision based on results.
- Validated results will be ready approximately 2 months after the samples collection.
- EPA will prepare a report summarizing results.

What if action is recommended?

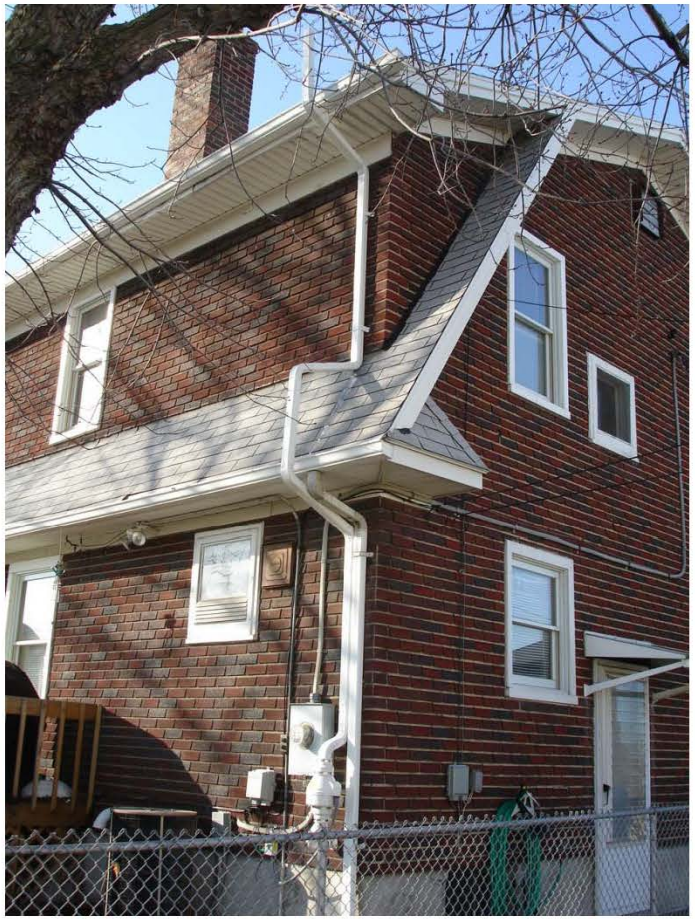
- Usually the installation of a vapor extraction system like the one used to extract radon will help to remove the vapors to the exterior of the structure.

- If EPA decides that a vapor extraction system is needed, it will be installed at NO COST to the residents.

Subsurface depressurization system



A subsurface depressurization system prevents vapor intrusion by directing hazardous vapors in the soil to the exterior of the building.



How to get updates about the progress of EPA actions?

The TCE Havertown website will continually be updated to provide easy access to the public to the Site information **www. epaosc.org/TCE_Havertown.**

Facts sheets and informational meetings as needed.

Other Resources

EPA's Vapor Intrusion website:

http://www.epa.gov/oswer/vaporintrusion/

This is a website for accessing information about EPA vapor intrusion efforts and provides resources and contact information for environmental professionals and the public.

EPA Engineering Forum Issue Paper "Indoor Air Vapor Intrusion Mitigation Approaches", http://www.epa.gov/nrmrl/pubs/600r08115/600r08115.pdf.

Contacts

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