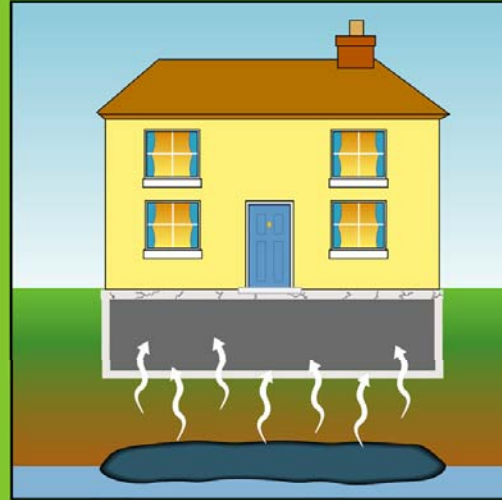




ITRC Vapor Intrusion Team



ASTSWMO Presentation

Greg Johnson

Colorado Division of Oil and Public Safety

September 26-27, 2005

ITRC's Vapor Intrusion Team

- Who are we
- Why do we exist
- What have we done so far
- Where are we going in the future



ITRC provides regulatory acceptance for new solutions

- State-led coalition working with industry and stakeholders to:
 - Improve state permitting processes
 - Speed implementation of new environmental technologies
 - Ensure that ITRC products and services have maximum impact among state environmental agencies and technology users



Products and Services

- Documents

- Regulatory and Technical Guidelines
- Technology Overviews
- Case Studies

- Trainings

- Internet-Based Training
- Classroom Training Courses

- Benefits

- Peer Exchange
- Technology Advocates



Diverse participants ensure a balanced approach

- State Organizations



Western Governors' Association



Southern States Energy Board

- Public stakeholders
- Academia
- Industry representatives

- Federal Agencies



Department of Energy



Department of Defense



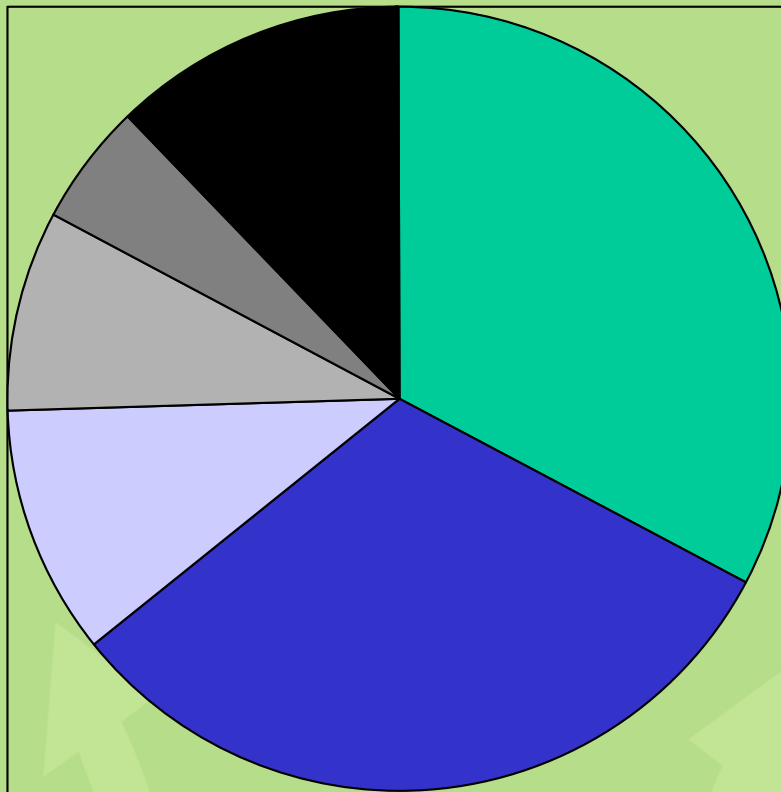
Environmental Protection Agency

- Host Organization



Environmental Council of the States

We are the largest ITRC team with a broad spectrum of members



- State (32)
- Consultants (31)
- Federal (10)
- Vendors (8)
- Industry (5)
- Other (12)

VI Team Contributions

Value: Facilitate a nationwide approach to evaluate the vapor intrusion pathway in a scientifically and technically defensible manner.



- Activities:*
- Evaluating site characterization technologies to shape technical/regulatory guidance and future training
 - Completion of a 43-state survey on regulatory issues related to vapor intrusion
 - Developing a uniform approach to deal with vapor intrusion sites

- Products:*
- Web site with current state contacts, regulatory survey responses, current links to existing guidance(in progress), and other vapor intrusion information
 - Technical/regulatory guidance documents on evaluating the vapor intrusion pathway

VI Team Website

ITRC - Vapor Intrusion - Microsoft Internet Explorer

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Address http://www.itrcweb.org/teampublic_Vapor.asp Go

INTERSTATE TECHNOLOGY & REGULATORY COUNCIL
Regulatory Acceptance for New Solutions

Members:
• Travel reimbursement

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Vapor Intrusion

Internet-Based Training

- Classroom Training
- Guidance Documents
- Quarterly Updates
- Conferences
- Success Stories
- Five-Year Program Plan
- Industry Affiliates Program
- Feedback

The ITRC Vapor Intrusion Team will research and gather information on indoor air as related to subsurface soil and groundwater contamination to determine when it may need to be evaluated, its resultant sampling and characterization techniques, and its subsequent remediation technologies.

Indoor air quality is overlooked in many environmental site investigation and soil/groundwater plume contamination scenarios. Lack of knowledge regarding indoor air quality issues and cost considerations tend to contribute to the omission of indoor air sampling and evaluation.

Indoor air contaminant levels may be significant enough at sites with subsurface contamination to cause immediate regulatory action in some cases and drive remediation in others. Nationwide, volatile organic contaminants in subsurface soil and groundwater are a recognized problem. Often, this contamination exists beneath occupied lands. Current lack of knowledge about indoor air issues and evaluation techniques may oversimplify the problem and may cause air quality investigations and subsequent risk assessments to understate or overstate the problem.



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Team Private Page
This area lets team members post announcements, share draft documents, and more.

Regulatory Survey
The Vapor Intrusion Team's survey results are now available (click title link above).

How to Use an ITRC Product
What is the value of using an ITRC

start | Internet

Inbox - Microsoft ... | RE: Request for ... | Microsoft Word | Microsoft PowerP... | ITRC - Vapor Intr... | 2:32 PM

VI Team Website

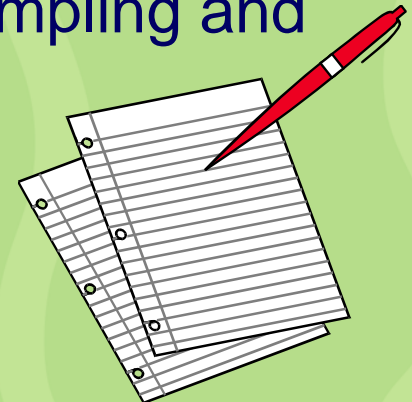
- Description and objectives of team activities
- Team leader contacts
- Schedule
- Regulatory survey
- Join an ITRC team
- Get on the ITRC mailing list
- Team private page

VI Team Private Page

- “File Cabinet” for posting of team specific documents
- Sub-group pages
- “Mail Room” for sending emails to team members
- Area for general team documents

Vapor Intrusion Survey Overview

- We developed and conducted an on-line survey of state, federal and tribal agencies regarding vapor intrusion regulations, policy and guidance
- The survey was available between August and October 2004. Ultimately, 54 regulators from 43 states, Canada and one EPA region responded to the survey
- The survey questions were divided into the following five topic areas: general, media, risk, sampling and remediation
- Regulatory Contacts List for each state, 2 EPA regions, and Canada



Survey Results

- 39 of 43 states say vapor intrusion is a current concern being actively addressed
- 35 states are concerned about vapor intrusion and future buildings
- 6 of 43 say vapor intrusion regulation is codified into law or regulation
- 7 additional states have defined policy
- 26 states are operating under informal operating procedure



Survey Results for Petroleum Hydrocarbons

- VI concerns were identified in every program (RCRA, CERCLA, brownfields, UST, dry-cleaning, FUDs, etc.)
- 42% assume biodegradation or apply a different attenuation factor for PHCs verses chlorinated compounds
- 71-82% apply VI procedures at PHC sites
- 71% do NOT have written guidance for VI remediation from petroleum-related hydrocarbons



Vapor Intrusion Survey

ITRC VI Survey - Microsoft Internet Explorer
Address: C:\Vapor_Intrusion\VI_survey_website\ITRC VI Survey.htm

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Vapor Intrusion Questionnaire

Internet-Based Training

Classroom Training
In the fall of 2004, the Interstate Technology and Regulatory Council's (ITRC) Vapor Intrusion Team developed and conducted an on-line survey of state, federal and tribal agencies regarding vapor intrusion regulations, policy and guidance. The survey results are accessible on-line. These results can be used by many different groups of people, including, but not limited to, decision makers, regulators and technology developers, regulators. These results will also be used by the ITRC Vapor Intrusion (VI) Team to guide the team's future activities, such as the development of guidance documents, training, and technology evaluations.

Guidance Documents

Quarterly Updates

Conferences

Success Stories
The survey was developed with the intention of collecting regulatory information and assessing opinions of individual state, tribal and federal regulators involved with vapor intrusion sites. To develop the survey, four subgroups of ITRC VI Team members used standard survey development methodology to develop and revise questions and responses. The survey questions were divided into the following five topic areas: general, media, risk, sampling and remediation. The responses varied by question, and included multiple-choice graded-response, multiple selection, and short-answer questions. Once a draft survey was compiled, a beta-test of the on-line survey was conducted to solicit feedback on the survey and to estimate the amount of time necessary to complete the survey.

Five-Year Program Plan

Industry Affiliates Program

Feedback

Once the development process was concluded, ITRC VI Team members and states points-of-contacts (staff members from state environmental agencies) contacted potential respondents familiar and involved in vapor intrusion issues. The survey was available on-line over a six week period from August to October of 2004. Ultimately, 54 regulators from 41 states, Canada and one EPA region responded to the survey.

Summary results of the survey have been provided as a graph, with a general summary of each result accessible as a link from the graph. These results are summarized below for each general topic area covered in the survey. Please note that because the survey was conducted in the fall of 2004, the survey data may have changed slightly since that time.

The sections of the survey are as follows:

- **General**
- **Media**
- **Risk**
- **Sampling Procedures**
- **Remediation**

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www.itrcweb.org/vaporintrusion

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ITRC VI Survey - Microsoft Internet Explorer

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Vapor Intrusion Survey

General

96% of survey respondents consider vapor intrusion a concern, with a majority of the respondents working on more than 5 sites. One-third of the respondents have policy or guidance, and 40% refer to the EPA OSWER vapor intrusion guidance. All regulatory programs within each state seem to be affected by VI. 42% of the respondents allow for biodegradation at petroleum sites. Less than half of the states look at future use when assessing vapor intrusion.

12. At your agency, is the vapor intrusion pathway:

- currently a concern and being actively addressed
- currently a concern but not being addressed
- not currently a concern, but perceived to become an issue in the future
- not a concern to this agency
- unknown

13. If the answer to question 12 above is 'a', please estimate the number of sites at which vapor intrusion is currently being investigated.

14-18. Does your agency have a procedure for evaluating the vapor intrusion pathway?

- Codified into law by either legislative act or regulation.
- Official agency policy/guidance formally adopted by your agency's management.
- Informal agency operating procedure.
- Agency procedure currently in active development.
- Defer to U.S. EPA guidance.

19-25. Please characterize your agency's procedures as indicated.

- Allow modeling for screening sites and/or closing sites from this pathway?
- Apply to chlorinated VOC sites?
- Apply to non-UST petroleum hydrocarbon sites?
- Apply to UST petroleum hydrocarbon sites?
- Assume biodegradation or different subsurface-to-indoor air attenuation rates for petroleum hydrocarbon sites vs. chlorinated VOC sites?
- Apply if building is not currently on the site but is known to be under construction or planned?
- Require evaluation for a hypothetical future building to fully close out the site?

26. UNDER CONSTRUCTION

27. What programs are affected by vapor intrusion at your agency?(Check all that apply)

- RCRA/HSWA
- CERCLA
- Brownfields
- Dry cleaners
- UST/AST
- Formerly Used Defense Sites
- State-lead cleanups
- Other

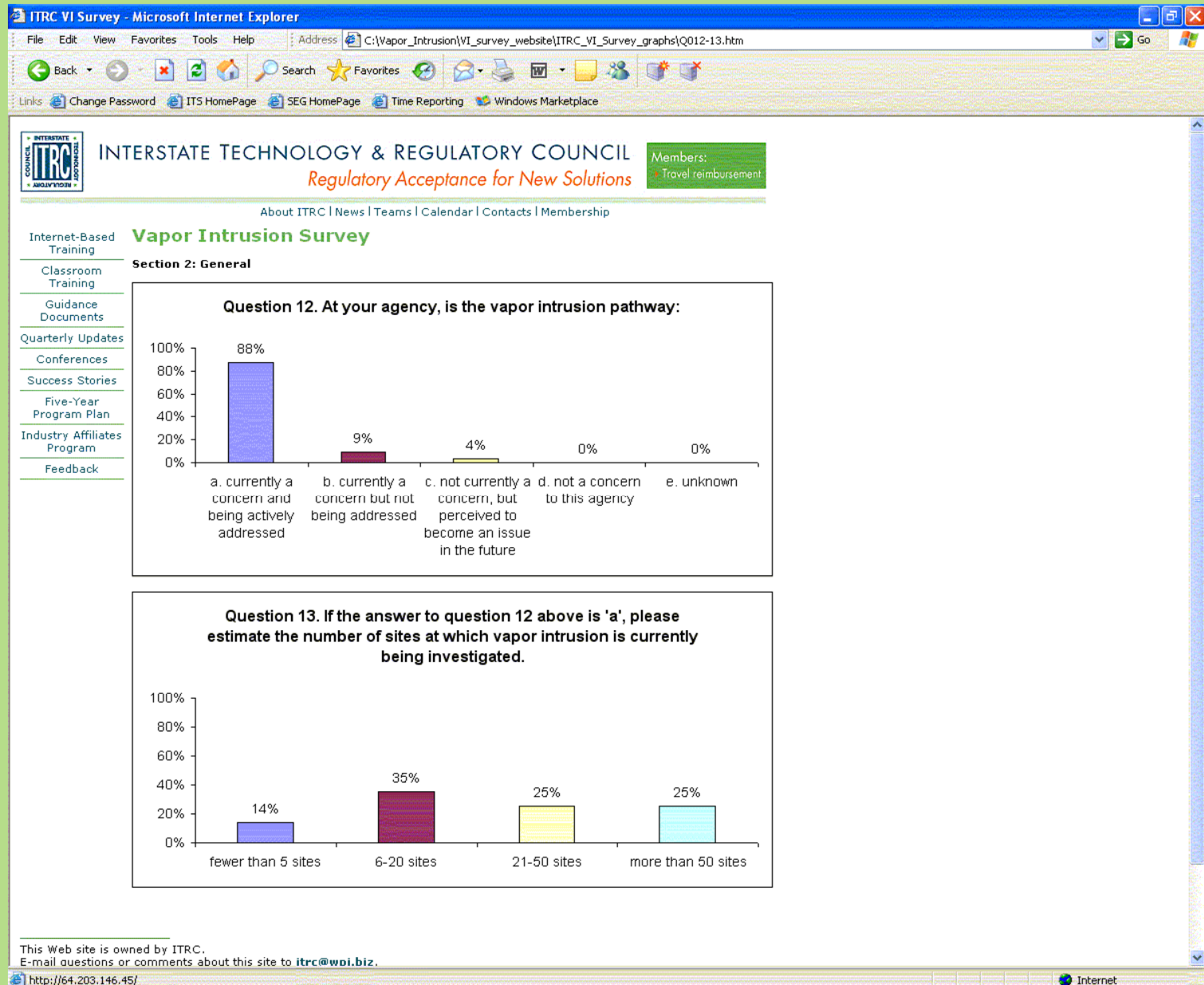
28. UNDER CONSTRUCTION

29-31. According to the U.S. EPA, vapor intrusion is evaluated for soil gas or groundwater contamination found within 100 feet horizontally or vertically of the building foundation. What distance does your agency use?

29. Not specified by the agency's procedure

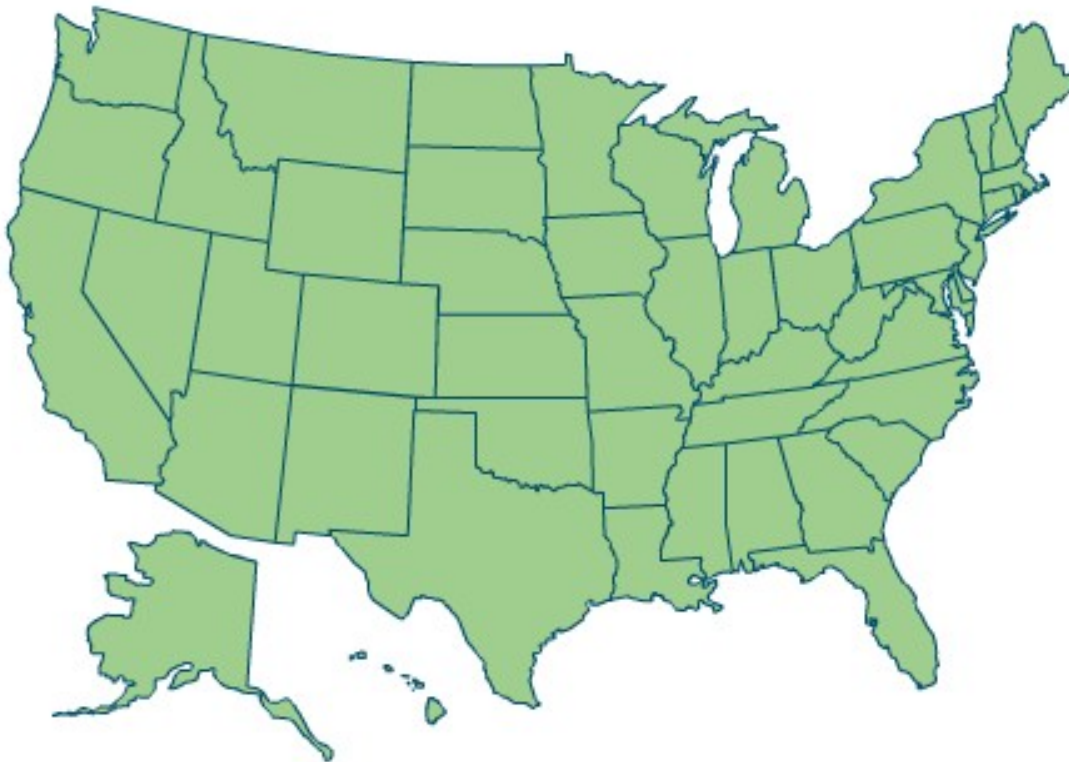
Internet

Vapor Intrusion Survey con't



State Contact Information

Vapor Intrusion Team Map - DEMO



**Click on a state
to see contact
information.**

www.itrcweb.org/vaporintrusion

State Contact Information

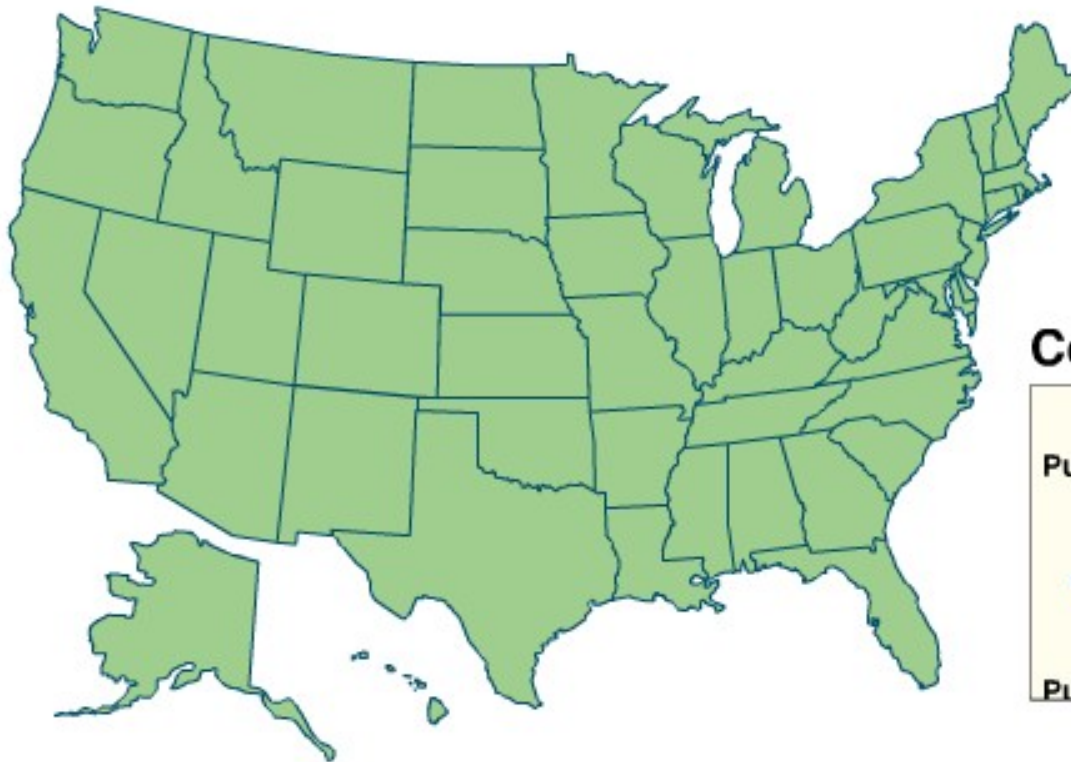
Vapor Intrusion Team Map - DEMO



**Click on a state
to see contact
information.**

State Contact Information

Vapor Intrusion Team Map - DEMO



Colorado

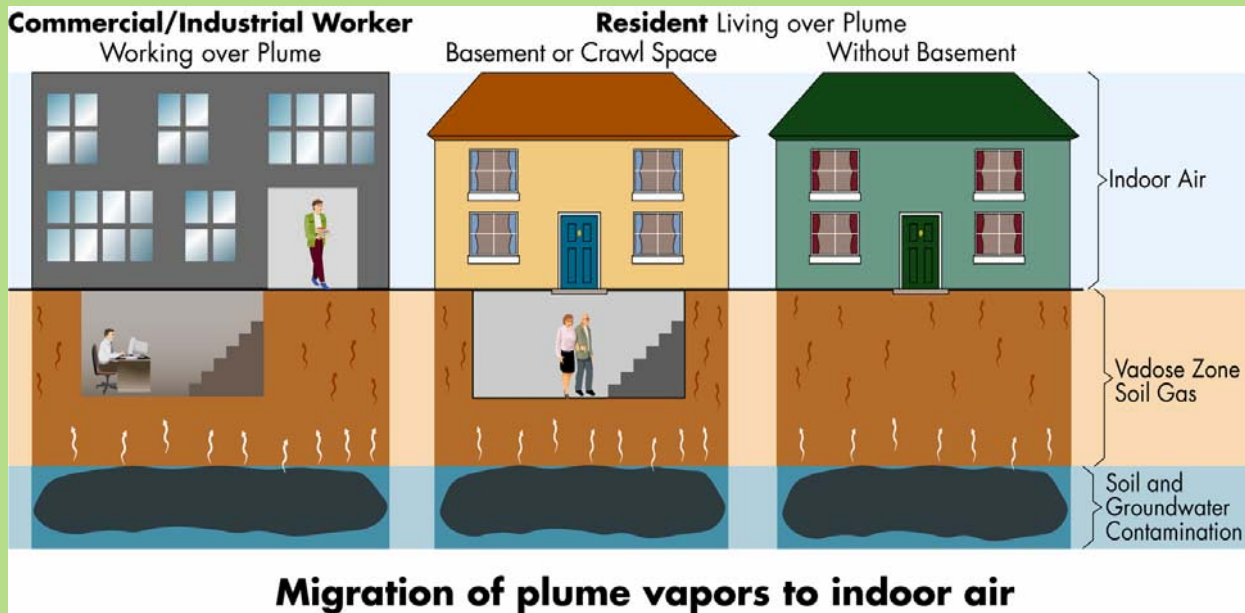
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CO Department of
Public Health and Environment



Upcoming VI Guidance Documents

Vapor Intrusion Pathway: An Overview



Key Vapor Intrusion Issues

- Site screening
- Background contamination
- OSHA PELs vs. health-based levels
- Biodegradation of chemicals
- Risk communication
- Future building scenario
- Remediation technologies
- Closure strategies

Upcoming VI Guidance Documents

Vapor Intrusion Pathway Site Scenarios: From Identification to Remediation



Dry-cleaning facilities

Gas stations

Industrial facilities

Chlorinated VOC plumes

Residential Developments

Others



Questions?



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