



Naples
Community
Health
Awareness

An important Public Health Evaluation is underway under the guidance of the Navy and Marine Corps Public Health Center. The Public Health Evaluation is designed to evaluate the potential short and long-term health risks associated with living in the Naples area as a result of inadequate trash collection, uncontrolled open burning of uncollected trash, and widespread dumping of waste, including chemical and other hazardous waste.

Launched in 2008, the Public Health Evaluation involves the collection of air, water, soil and soil gas samples from throughout the region to identify whether there are potential health risks.

For details and background information, visit the website listed at the bottom of this page.

Your Health: Facts for Navy Families in Naples

About: Building Structures and Vapor Intrusion

The U.S. Navy is committed to ensuring our families are safe while serving our country at home or overseas. The following information is provided as part of a wide-ranging effort to understand the health risks of our personnel and families living in Naples, Italy. Currently underway is a comprehensive Public Health Evaluation to assess potential short and long-term health risks associated with living in the Naples area (see sidebar). In line with our commitment to continually share important health information, we encourage you to review the following information.

What is Vapor Intrusion?

Vapor intrusion is when chemicals “volatilize” in soil (become a vapor) and migrate into overlying buildings. Under some conditions, chemicals in soil or groundwater may migrate via soil gas into nearby basements, buildings, and other enclosed spaces. Vapor intrusion is a concern when the chemical vapors that migrate into a building can cause adverse health effects.

Any structure that has contact with the ground surface is susceptible to vapor intrusion, depending on several factors. These factors include the type of soil and its moisture content underneath the building, concentrations of the volatile chemical present in soil gas underneath the building and the chemical's properties, building design and construction, and the difference in pressure between the outdoor air and indoor air.

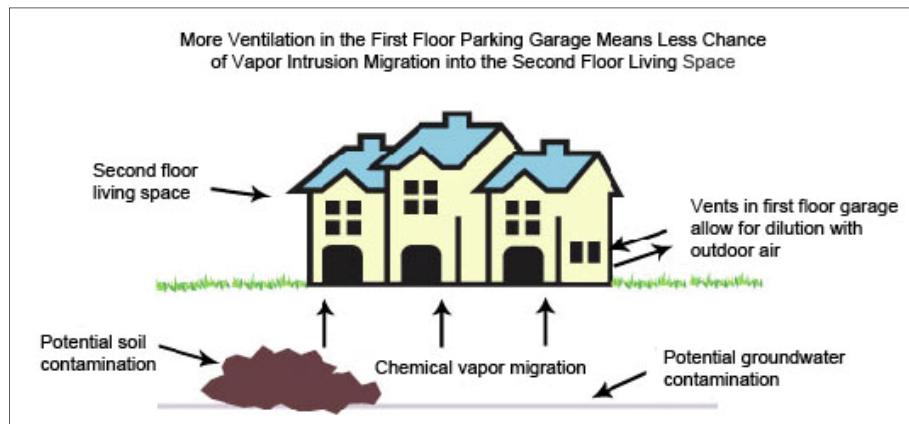
Vapor intrusion is typically only a concern on the lowest level of a building, such as in a basement, crawl space, or level directly

above the ground surface in a slab-on-grade building.

This fact sheet discusses building characteristics that tenants can consider when looking for a residence. Selecting a home that is least susceptible to vapor intrusion will help minimize the risk of vapor intrusion occurring.

How do Vapors Get into Buildings?

To understand what structural components should be considered to minimize the risk of vapor intrusion occurring, it is important to understand how chemical vapors can enter a building. Although there may be chemicals in underlying groundwater or soil, vapor intrusion can only occur if the chemical vapors can enter the building through “pathways,” or entryways. Pathways can include cracks or gaps in the concrete-slab floors, basement floors, sump pumps, elevator shafts, and wherever electrical wires or pipes penetrate the foundation. Heating, air conditioning and ventilation can also draw vapors into buildings.





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What Structural Components should be Considered when Searching for a Residence?

There are several structural components that should be considered when searching for a residence. The following structural elements can either maximize vapor intrusion, by offering pathways for chemical vapors to enter inside the building, or can minimize the probability of vapor intrusion occurring by offering adequate ventilation with outdoor air.

First Floor Parking Garages

Generally, homes that have a living space on the second floor (e.g., an apartment building), with a first floor parking garage that is well ventilated, are not very susceptible to vapor intrusion because of the vapors' dilution with outdoor air that occurs on the first floor.

In Naples, many homes outside of the downtown area have first floor parking garages that have large vents surrounding the perimeter walls of the garage. These vents allow for exchanges with outdoor air, which dilutes the chemical vapors.

It is important to note that vapor intrusion will still occur in the first floor parking garage. However, if no one lives in the garage, exposure to this vapor intrusion would not pose a significant health risk. Thus, the risk of living in the home will likely be acceptable from a risk assessment point of view because of the dilution that would occur before the vapors migrate into the living space.

Basements

Buildings completed below grade with a basement or partial basement may be susceptible to vapor intrusion. There may be cracks or gaps in the floors and walls of the basement, which would allow underlying chemical vapors to enter the structure. Furthermore, finished basements, such as those used for living quarters, generally do not have good ventilation and lack air exchange with outdoor air. It is important to have

Information about a building's construction and its current condition and operation could provide insight into the likelihood of vapor intrusion occurring. The following should be considered:

- Age of building
- Foundation of building and type of slab
- Building materials
- Presence of sumps, perimeter drains and elevators
- Basement details
- Crawl spaces
- Vapor barriers or systems in place

ventilation with outdoor air to dilute chemical vapors.

Crawl Spaces

Crawl spaces, depending on the construction, may or may not be well ventilated. When crawl spaces are well ventilated, there is a low probability that vapor intrusion will occur in the living space above, because the vapors that have entered into the crawl space are diluted with the exchange of outdoor air. If crawl spaces are not well ventilated (i.e., built without vents or designed to seal tightly), they can be a candidate for vapor intrusion.

Slab on Grade

The type of building slab should be considered when selecting a residence. Slabs should be checked for cracks, utility piping and drains, which may allow for gaps in the slab and other pathways for chemical vapors to enter the building. In cases where the floor is poured separately from the foundation wall during construction, vapors can enter through the perimeter crack between the wall and the floor.

For more information about vapor intrusion, download the "Vapor Intrusion" fact sheet and "Understanding Vapor Intrusion: A Guide to Key Concepts and Principles" video, from the Naples Community Health Awareness website listed at the bottom of this page.