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Worried about indoor air quality? - Two things to be concerned with, PCBs and VI

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If you have a few minutes to think about something besides football and politics this year, you might want to spend a moment on the topic of indoor air quality. Think about this: the average active adult might eat 2-3 pounds of food a day, drink 1-3 quarts of water a day, but will inhale 20-30 pounds of air a day! We aren't used to thinking about air as having "weight", it does though. The point is if you worry about the quality of food you eat and water you drink, then you should be very concerned about the quality of air you breathe. You bring a lot more of the environment into your body by breathing than you do by eating or drinking combined.

In the past few years environmental scientists have found two new things for us to be concerned with when it comes to indoor air quality: PCBs and vapor intrusion (VI). PCBs, short for polychlorinated biphenyls, are an oily chemical that were widely used until they were banned in 1978. PCBs had a variety of uses, but when they are found in indoor air it is usually a result of them having been used as an ingredient in building materials prior to the 1978 ban.

PCBs were often used in paints, floor finishes, ceiling coatings and in the caulk used to seal spaces around doors and windows and construction joints. PCBs were used in building materials because they are very chemically stable, and they in-effect help to extend the useful life of the materials they were added to.

It was only in the past 10 years or so that scientists realized that PCBs could get into indoor air. There have been a number of stories about PCBs getting into school air, with incidences in Lexington, Westport and Peabody all making it into the news. These same PCBs are likely to be found in commercial and retail buildings too. While the health risks from PCBs may be overblown in news stories, it is an area of growing concern for environmental regulators like the USEPA.

The second indoor air quality issue in the news is vapor intrusion or VI. When the average person first hears about VI, their reaction is to think that it sounds too far-fetched to be a real concern. However, you would be surprised to learn how often this problem has been found. VI can occur when a volatile organic chemical - like gasoline or dry cleaning fluid - is spilled on the ground. This gasoline or cleaning solvent then moves down until it reaches the groundwater table (usually around 15 ft. below the surface). Once dissolved in the groundwater the contaminant moves freely under whatever roads, buildings, or parks happen to be over the flow path.

What happens next is that a portion of the contaminants volatilize out of the groundwater and migrate up through the soil and they accumulate under a building. These contaminants are then able to find minute cracks in the building floor slab and enter the building's indoor air. This can happen in stores, homes and other occupied buildings. Sometimes the concentration of contaminants in the air can be so high that the Department of Environmental Protection (DEP) has temporarily closed businesses and moved people out of their homes until the problem could be

fixed.

The VI problem has been a dominant national theme among environmental scientists over the past two years. In Massachusetts the DEP has been developing new regulatory guidance on investigating and managing VI; a new version of the guidance was issued just before the end of 2011. This new guidance reflects the national trend towards much stricter regulation of VI and possible VI situations.

Before moving ahead with a commitment to a retail property, it makes sense to know what you are getting into when it comes to indoor air quality. For yourself, your employees and your customers you do not want to discover down the road that you have bad air in your building; an once of prevention is worth more than a pound of cure in this type of situation. Knowing the past uses of a property and the history of the surrounding properties is information that can help you understand what might be happening in your building and underground. If red flags pop-up based on the historical information, going into a testing program may be the way to proceed.

Environmental testing to assess indoor air quality may include testing air and materials from inside of the building, but it may also include testing "soil gas" from under the building. Soil gas is the name used to describe the gas that accumulates between the soil particles. Many soils have between 20-30% void space around the soil particles, so there is a surprising amount of soil gas underground. In the end, having a reliable environmental expert to interpret all the information and make recommendations can make a big difference in optimizing indoor air quality.

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