Indoor Air Quality Fact Sheet

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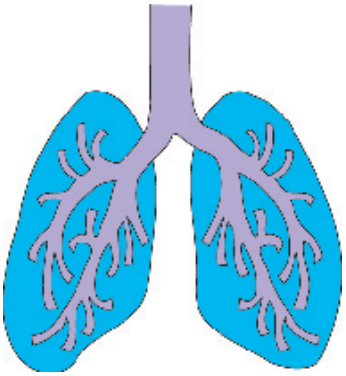
Texans are constantly seeking to improve the energy efficiency of their homes and workplaces in order to increase comfort and control costs. Installing vapor barriers, insulating walls and ceilings, and placing seals around windows and doorframes have helped a significantly. These measures allow air-conditioning systems to more easily cool or heat the air in the building. However, they have also greatly decreased the rate of exchange between outdoor and indoor air, sometimes leading to increased levels of particles, chemical compounds and mold indoors. Scientific studies of indoor air are showing that this increase can cause both short- and long-term health problems for some people. Since we spend about 90 percent of our lives indoors at work and at home, air quality is important.

Particles

Dust is one of the constant enemies of healthy indoor air. Those particles that are too small to see can cause or increase respiratory problems for many people. Sources of particles include environmental ("second hand") tobacco smoke, cooking, candles, tracked-in soil, pet dander, human skin, and copier toner.

Carpets are storehouses and factories of particles. Vacuum and steam clean carpets regularly to keep dust levels down. Avoid using carpet 'shampoos' because they contain deodorizers that add to the concentration of chemical vapors in the air. Steam cleaning carpets also suppresses the dust mites that live in them. Dust mites increase the level of dust by eating matter that is tracked in from outdoors or food particles that fall to the floor. All humans shed skin cells that end up on the dust mite menu. When mites eat, they produce solid wastes and when they die, their body parts crumble and add to the mess.

Other sources of particles in the workplace, especially in the food service and hospitality industry, include candles and cooking. Wicks of foreign-made candles may contain toxic lead oxide to make the wick stand upright as it burns. As candles burn, certain compounds are made or forced out from the wick and the wax by the combustion. These compounds stick to the black soot produced by the flame. Scented candles can release up to sixty times more of these particles than unscented candles. Pleasant scent compounds such as limonene (lemon and orange aromas) and pinene (evergreen) are not by themselves harmful, but if they combine with ozone, harmful compounds are produced that are readily absorbed through our lungs. Do not burn scented candles if you have an ozone-generating unit. Frying and especially stir-frying causes microscopic oil droplets to become suspended in the air. A good filtering stove hood can help trap these particles.



Replace the ordinary dust filters in the air-conditioning system with High Efficiency Particulate Air (HEPA) filters. Portable HEPA filter units can be purchased that dramatically cut the levels of airborne particles and compounds in homes and offices. These filter units take up no more floor space than a straight-backed chair. Avoid buying the small inefficient tabletop models. One of the advantages of a room air cleaner is that it is operated independently of the heating, ventilating, and air conditioning (HVAC) system. Room air cleaners can be fitted with a variety of filter media to meet any contaminant problem. Good quality air cleaners can clean the air in a standard sized room over eight times per hour. Room air cleaners are small enough to be moved from room to room so they can be used where they are most needed. They come equipped with handles and larger models come standard with wheels.

There are many electronic devices that claim to clean the air by making negative ions and ozone. They do make both ozone and negative ions, and they do clean the air. However, that's not the whole story. First, ozone is a powerful oxidizing agent that is classed as an environmental pollutant rather than a fresh scent. Second, the negative ions produced by these devices attach themselves to dust, ash, pollen, and smoke particles and cause those particles to bind themselves to the walls and furniture. The air really does become cleaner, but the surfaces become dirtier as a result.

A full electrostatic air cleaner is a good product and can be bought at heating and air-conditioning dealers. Properly designed machines use positive ions to avoid producing ozone and provide a negatively charged surface for the positively charged dirt to stick to so that it doesn't deposit itself on the walls.

Volatile Organic Compounds (VOCs)

Many common cleaners and deodorizers contain chemical compounds that are safe to be exposed to in small amounts. Some, however, are not harmless. Para- dichlorobenzene (p-DCB) is the deodorizer that makes up the pink cakes that are sometimes used in urinals in public restrooms for men. According to the Environmental Protection Agency, long-term exposure to high levels of p-DCB has the potential to cause anemia, skin lesions, appetite loss, damage to liver and changes in blood. It is best not to use it in the workplace.

When electronic devices are new, they give off compounds such as toluene and xylene from the paints and adhesives used on subcomponents inside them. Toluene and xylene are suspected cancer-causing agents. It is a good idea to run new TVs, computers, and audio equipment for a period of at least four hours in a well-ventilated area to disperse these VOCs.

Radon

Radon is a radioactive gas that is produced in nature by the decay of uranium ore in the earth. If radon is taken into the lungs it causes damage that may eventually lead to lung cancer. Soil containing radon is found in all states. In buildings with basements or those built on concrete slabs, radon can be forced through concrete by the pressure of air in the soil and can concentrate in the indoor atmosphere. People occupying these buildings will be exposed to concentrations that could cause health problems after a period of years. Buildings can be tested for radon. Be sure to contact a reputable testing firm that is licensed by the state. Remediation installations usually take the form of sealing concrete surfaces and providing piping with intakes below the floor slab or in crawl spaces. The pipe system leads to a fan that continuously draws air containing radon out of the soil or building.

Molds

Molds are always present in all environments. Like any other living thing, they want to eat and reproduce. The key to controlling mold is to deprive it of food and/or water, which can be a problem.since one of the favorite foods of mold is wood this can be a problem. Wooden structures need to be kept dry. This means periodically checking the integrity of the roof, foundation structure and plumbing. Special attention should be paid to the roof membrane after any violent weather event. Does the building have spaces that receive no ventilation, but where moisture levels are elevated? Consider installing air circulation devices. Install dehumidifiers in areas that can't be properly ventilated. In addition to these types of controls, regular maintenance is necessary to control mold.

Silicone caulk is another big favorite food of mold and is used in areas where moisture is often present. Clean it as often as necessary, using bleach or a tile cleaner. If cleaning is put off for too long the mold will penetrate the caulk and the caulk will have to be removed and replaced.

Remember to practice safety. Don't learn it by accident.

This factsheet was published with information from:

Environmental Protection Agency - Indoor Environment Management.
http://www.epa.gov/gateway/learn/airpollution.html

Centers for Disease Control – National Institute for Occupational Safety and Health Indoor Environmental Quality topic page -
http://www.cdc.gov/niosh/topics/indoorenv/

California Department of Health Services – Indoor Air Quality Program –
http://www.cal-iaq.org/

Occupational Safety and Health Administration – Indoor Air Quality page –
http://www.osha.gov/SLTC/indoorairquality/index.html

The Texas Department of Insurance,
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