

# The Inspector Speaks<sup>SM</sup>

## It's What's Inside That Counts: An introduction to indoor air quality

Pollution. The word calls to mind brown clouds, belching smokestacks and toxic waste spills, but does it also make you think about the air you're breathing inside your home or workplace?

EPA studies of human exposure to air pollutants indicate that indoor air levels of many pollutants may be 2-5 times, and occasionally more than 100 times, higher than outdoor levels. And indoor air pollutants are of particular concern because it is estimated that most people spend as much as 90% of their time indoors.

### What Causes Indoor Air Problems?

Over the past several decades, our exposure to indoor air pollutants is believed to have increased due to a variety of factors, including the construction of more tightly sealed buildings, reduced ventilation rates to save energy, the use of synthetic building materials and furnishings, and the use of chemically formulated personal care products, pesticides and cleaners.

The relative importance of any single source of indoor air pollution depends on how much of a given pollutant it emits and how hazardous those emissions are. In some cases, factors such as how old the source is and whether it is properly maintained are significant. For example, an improperly adjusted gas furnace can emit much more carbon monoxide than one that is properly adjusted.

Some sources, such as building materials, furnishings and household products like air fresheners, release pollutants more or less continuously. Others, generated by activities carried out indoors, release pollutants intermittently. These include smoking, the use of unvented or malfunctioning stoves, furnaces or space heaters, the use of solvents in cleaning, hobby and workplace activities, the use of paint strippers in redecorating activities, and the use of cleaning products and pesticides. High pollutant concentrations can remain in the air for a long time after some of these activities.

### Why Ventilation Is Important

If too little outdoor air enters a building, pollutants can accumulate to levels that can pose health and comfort problems. Unless they are built with special mechanical means of ventilation, buildings that are designed and constructed to minimize the amount of outdoor air that can "leak" into and out of the building may have higher pollutant levels than others. However, because some weather conditions can drastically reduce the amount of outdoor air that enters a building, pollutants can build up even in buildings that are normally considered "leaky."

### Indoor Air Pollution and Your Health

#### Immediate Effects

Immediate effects, which may show up after a single exposure or repeated exposures, include irritation of the eyes, nose and throat, headaches, dizziness and fatigue. Such immediate effects are usually short-term and treatable. Sometimes the treatment is simply eliminating the person's exposure to the source of the pollution if it can be identified and isolated. Symptoms of some diseases, including asthma, hypersensitivity pneumonitis, and "humidifier fever," may also appear soon after exposure to some indoor air pollutants.

The likelihood of immediate reactions to indoor air pollutants depends on several factors. Age and preexisting medical conditions are two important influences. In other cases, a person's reaction to a pollutant depends on individual sensitivity, which varies tremendously. Some people can become sensitized to biological pollutants after repeated exposures, and it appears that some people can become sensitized to chemical pollutants as well.

Certain immediate effects mimic those of colds or other viral diseases, so it is often difficult to determine if the symptoms are a result of exposure to indoor air pollution. For this reason, it is important to pay attention to the time and place that symptoms occur. If the symptoms fade or go away when

a person is away from home or work, for example, an effort should be made to identify indoor air sources that may be possible causes. Some effects may be made worse by an inadequate supply of outdoor air or from the heating, cooling or humidity conditions prevalent in the building.

#### Long-term Effects

Other health effects may show up either years after exposure has occurred or only after long or repeated periods of exposure. These effects, which include some respiratory diseases, heart diseases and cancer, can be severely debilitating or even fatal.

While pollutants commonly found in indoor air are responsible for many harmful effects, there is considerable uncertainty about what concentrations or periods of exposure result in specific health problems. Individuals also react very differently to exposure to indoor air pollutants. Further research will help us understand which health effects occur after exposure to the average pollutant concentrations found indoors and which occur from occasional exposures to higher concentrations.

Regardless, it is prudent to try to improve the indoor air quality around you even if symptoms are not noticeable.

For more information, visit the EPA's indoor air quality website: [www.epa.gov/iaq](http://www.epa.gov/iaq). This site is a great resource for information on many indoor air quality topics. Information is also available by phone: (800) 438-4318.



NATIONAL INSPECTION SERVICES

Stuart Professional Park | 1136 East Stuart Street, Suite 4204 | Fort Collins, Colorado 80525-1193  
(970) 482-1976 | (970) 482-3388 fax | 800-248-1976 | [www.nationalinspection.net](http://www.nationalinspection.net)

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