# IAQ in the News Again

*By Dawn Shoemaker*

A recent Google™ search using the keywords "indoor air quality" found more than five million results. With all of the information available on the subject, one would think that indoor air quality (IAQ) issues and potential health-related problems would be concerns of the past.

However, IAQ news and stories persist mainly because the problem persists. For instance, asthma, which can be triggered by poor IAQ especially among children, is now recognized as the most common chronic disease of childhood, and studies indicate this disease disproportionally affects inner-city children living in public housing.

### Rectifying IAQ Spatial Problems

When IAQ complaints are heard throughout a facility:

- ❑ Examine HVAC and ventilation systems.
- ❑ Consider outdoor air quality.
- ❑ Check cleaning materials and equipment recently used in the facility.
- ❑ Determine whether there have been recent construction projects.
- ❑ Investigate the addition of new carpets, floors or furnishings.

### Rectifying Time-Specific IAQ Problems

When complaints about IAQ are heard at certain times:

- ❑ Review HVAC operating cycles.
- ❑ Investigate deliveries to the facility.
- ❑ Check HVAC load variables and whether ventilation systems can handle the number of people using the facility at specific times.
- ❑ Investigate whether problematic cleaning products are used during the workday.
- ❑ Consider outdoor sources.
- ❑ Investigate food and eating in the facility (at desks or workstations)

Recently, both asthma and poor IAQ made headlines once again when the April 7, 2009, edition of *The New York Times* published an article titled, "House Dust Yields Clues to Asthma: Roaches." The story focused on airborne dust, a well-known trigger for respiratory problems. However, new information found in this article provides another piece to the puzzle. Scientists have now pinpointed exactly what is in dust that triggers asthma and many other respiratory problems in young children.

Scientists at Boston University School of Medicine collected dust particulates vacuumed from public housing facilities. The dust samples contained cockroach remains that became airborne after the insects died. When laboratory mice inhaled this dust, they soon experienced difficulty breathing, showing signs of an asthma attack.

Cleaning crews can in fact help minimize poor IAQ concerns. But before investigating the cleaner's important role, one needs to have a better understanding of IAQ. Additionally, the human costs that can be attributed to poor IAQ must be validated.

## History in the Air

Many first heard about poor IAQ problems when the term *sick building syndrome* (SBS) came into use in the media and building industry. SBS was coined in the mid-1970s after the oil embargo of 1973 and referred to increased absenteeism, low morale, decreased worker productivity, allergies, and even asthma that resulted from "unhealthy" indoor air found in many office buildings, schools and facilities built during that period.

Before the embargo, building ventilation standards called for approximately 15 cubic feet per minute (cfm) of outside air to enter a facility for each building occupant. The ventilation diluted or removed chemical, food, cleaning, and miscellaneous pollutants and odors from the indoor environment. But after the oil crisis and the implementation of national energy-conservation measures, the amount of outdoor air provided for ventilation was reduced to just five cfm per occupant. SBS was the result of less fresh air circulating in buildings.

However, concerns about poor IAQ did not begin in 1973. Indoor air containing sulfur emissions was analyzed and warranted concern back in the 1920s. Volatile organic compounds (VOCs), which are discussed frequently today in relation to green cleaning, were first noted as potentially marring IAQ and affecting health back in the 1930s. In the 1950s, after an automobile and population boom in Los Angeles, smog and its impact on both outdoor and indoor air caused considerable apprehension.

In fact, it was chiefly because of auto pollution issues in the 1960s that the U.S. government issued a series of laws and regulations with the intention of protecting air quality. Since then, state and local governments have passed many regulations, and several have been revised and expanded over the years. Among the most notable:

- **1967**—Air Quality Act; established air quality regions in the United States
- **1970**—Clean Air Act; attempted to control air pollution with a national air quality program
- **1977**—Clean Air Act amended; addressed coal usage and set a schedule for emissions reduction
- **1985**—EPA National Strategy for Toxic Air Pollutants; identified five chemicals for more regulation
- **1988**—Indoor Radon Abatement Act; established indoor air must be as free of radon as possible
- **1990**—Clean Air Act amended; addressed acid rain, toxic emissions reduction, and a schedule of attainment

## The Costs of Poor IAQ

The U.S. Environmental Protection Agency (EPA) considers indoor air pollution the number one environmental health problem in the United States, affecting as many as 30 percent of all commercial buildings and 40 percent of all workers, and causing an 18 percent reduction in overall worker productivity.[1]

It is estimated that poor IAQ costs the U.S. economy as much as $168 billion per year, partially the result of direct medical costs and the rest from absenteeism. The American