

**UNIVERSITY OF HOUSTON
ENVIRONMENTAL HEALTH AND LIFE SAFETY
POLICIES AND PROCEDURES**

SECTION: ENVIRONMENTAL SAFETY

SUBJECT: INDOOR AIR QUALITY (IAQ)

I. PURPOSE

Most people are aware that outdoor air pollution can impact their health, but indoor air pollution can also have significant and harmful health effects. The U.S. Environmental Protection Agency (EPA) studies of human exposure to air pollutants indicate that indoor levels of pollutants may be two to five times — and occasionally more than 100 times — higher than outdoor levels. These levels of indoor air pollutants are of particular concern because most people spend about 90 percent of their time indoors. The definition of good indoor air quality (IAQ) management includes:

- Control of airborne pollutants;
- Introduction and distribution of adequate outdoor air; and
- Maintenance of acceptable temperature and relative humidity.

II. SOURCES

Outdoor sources should also be considered since outdoor air enters buildings through windows, doors and ventilation systems. Thus, transportation and grounds maintenance activities become factors that affect indoor pollutant levels as well as outdoor air quality.

Temperature and humidity cannot be overlooked because thermal comfort concerns underlie many complaints about "poor air quality." Furthermore, temperature and humidity are among the many factors that affect indoor contaminant levels.

Failure to prevent or respond promptly to IAQ problems can:

- Increase long- and short-term health problems for students and staff such as:
- Cough
- Eye irritation
- Headache
- Allergic reactions, and
- in rarer cases, life-threatening conditions such as Legionnaire's disease, or carbon monoxide poisoning

These IAQ problems can:

- Impact attendance, performance and comfort.
- Reduce staff performance.
- Accelerate the deterioration and reduce the efficiency of the physical plant and equipment.

Indoor air problems can be subtle and do not always produce easily recognized impacts on health, well-being, or the physical plant. Symptoms may be:

- Headache
- Fatigue
- Shortness of breath
- Sinus congestion

- Coughing
- Sneezing
- Dizziness
- Nausea
- and irritation of the eye, nose, throat and skin

All symptoms are not necessarily due to air quality deficiencies. Due to varying sensitivities among occupants, IAQ problems may affect a group of people or just one individual. In addition, IAQ problems may affect people in different ways.

Individuals that may be particularly susceptible to effects of indoor air contaminants include, but are not limited to, people with:

- Asthma, allergies, or chemical sensitivities;
- Respiratory diseases;
- Suppressed immune systems (due to radiation, chemotherapy, or disease)

III. PROCEDURES

1. The Indoor Air Quality (IAQ) investigator upon receiving the telephone call, should ask what symptoms individuals are having.
2. In addition, determine the exact location and time when the IAQ event is happening. Upon arrival enter the building and determine if any odors are present.
3. Interview occupants, asking about symptoms, room cleaning or construction work.
4. To determine possible sources, conduct visual inspection, look for water leaks or surface discoloration.
5. Look for the following;
 - Are the filters clean and properly installed?
 - Are dampers operating correctly?
 - Is there moisture, debris or mold in or near the unit?
 - Are drain pans clean and sloped toward the drain?
 - Do coils need to be cleaned?
 - Is condensation often present on windows or cold surfaces?
 - Do you see wet or frequently damp areas?
 - Is indoor relative humidity above 60 percent?
6. Use the air sampling instruments (dust monitor, temperature and humidity gauge, carbon dioxide/ carbon monoxide meter, multigas meter) to determine if there are elevated amounts of carbon dioxide, organic vapors or carbon monoxide. Determine if carbon dioxide (CO₂) is more than 700 ppm above outdoor concentrations.
7. For a better understanding of the situation, speak with maintenance personnel about building problems or complaint frequency, air distribution systems and location of the heating, ventilation and air-conditioning (HVAC) mechanical room. Inspect the room for dirty air filters, puddles of water, broken equipment or being used as a storage area.
8. After the inspection, check with the building operator to ensure outdoor air ventilation is provided according to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard or local code.
9. Ensure that facilities and maintenance staff change filters on a regular basis.
10. Instruct facilities and maintenance staff to clean all air supply diffusers, return registers and outside air intakes.
11. Check with your facilities and maintenance staff to ensure HVAC condensate pans are draining.
12. Advise facilities to use spot treatments and baits rather than broad pesticide applications.
13. Place barrier floor mats at all building entrances to reduce the amount of dust and dirt that enter the school and use vacuum cleaners with high-efficiency filters.