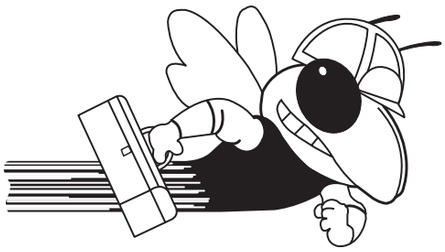


Indoor air quality

Tech Guide No. 8 Published by the Electro-Optics, Environment & Materials Laboratory of Georgia Tech Research Institute 1997

Symptoms Associated with Poor IAQ

Common symptoms include
- headache
- fatigue
- upper respiratory irritation (eyes, nose, throat)
- sinus congestion
- cough
- sneezing
- nausea
- shortness of breath
- dizziness

Presence of symptoms does not necessarily mean poor IAQ because symptoms are often not clearly defined or associated with a particular illness. Problems associated with poor IAQ include (source, NIOSH)
- inadequate ventilation, 53% of cases
- inside contaminant source, 15%
- outside contaminant source, 10%
- microbial growth, 5%
- building materials 4%

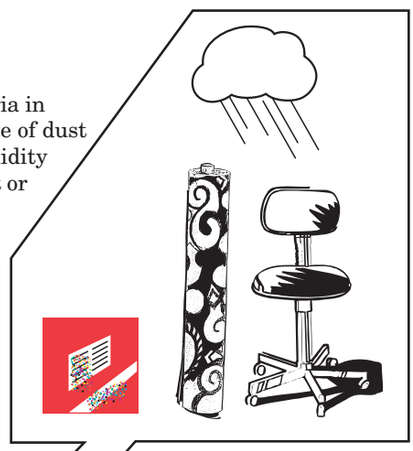
Acceptable Indoor Air Quality (IAQ)

No federal regulations exist on acceptable IAQ.
A voluntary IAQ standard has been established by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE):
- no known contaminants at harmful concentrations;
- no more than 20% of occupants express dissatisfaction;
- CO_2 levels are 600 parts per million (ppm) or below;
- relative humidity, 30%–60%;
- winter temperature, 68–75° F;
- summer temperature, 73–79° F.

Microbial Growth

Problems
- fungi, molds, or bacteria in HVAC systems because of dust buildup and high humidity
- water-damaged carpet or furnishings harboring microbial growth

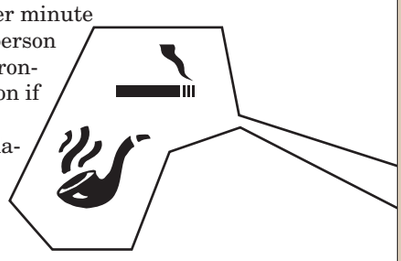
Solutions
- remove damaged items
- perform preventive maintenance of HVAC systems

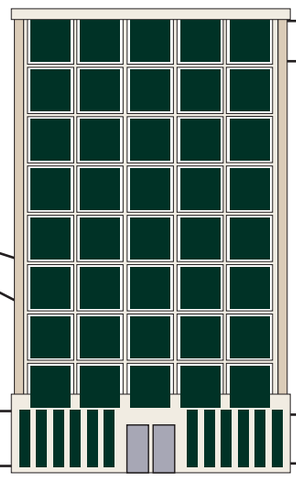


Inadequate Ventilation

Problems
- not enough fresh air being supplied by the HVAC system
- contaminants present, such as volatile organic compounds (VOCs), carbon monoxide (CO), cigarette smoke, and high carbon dioxide (CO_2) levels

Solutions
- supply 20 cubic feet per minute (cfm) of fresh air per person in a typical office environment, 60 cfm per person if smoking is allowed (ASHRAE recommendations)
- keep CO_2 levels under 600 ppm

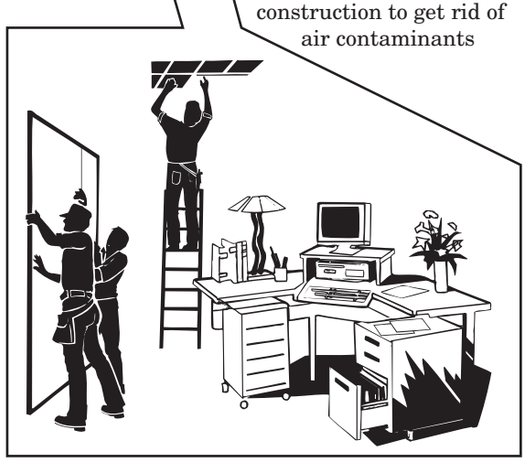




Inside Contaminant Sources

Problems
- remodeling or construction in adjoining areas causing contaminants to enter the HVAC system through return ducts and to circulate to areas not under renovation
- new carpet and furniture off-gassing VOCs

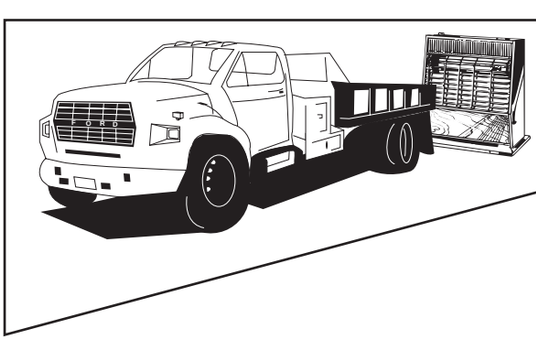
Solution
- run the HVAC system with no one in the building following renovation or construction to get rid of air contaminants



Outside Contaminant Sources

Problem
- fresh air intake for the HVAC system located near outside contaminant sources, such as a truck loading area

Solution
- relocate the air intake or close the air intake during heavy traffic in loading area



For more information, call the Safety, Health & Environmental Technology Division, 404/894-3806.

Georgia Tech Research Institute