

BUILDING A BUSINESS

How's the air you breathe?

Anyone running a business today sooner or later encounters air quality issues. Poor air quality isn't just unpleasant; it can be bad for business.

Failure to prevent or respond promptly to air quality problems can harm the health of children and staff, strain relationships with parents, force your facility to close or relocate, create negative publicity, and raise the possibility of lawsuits.

Most indoor air quality problems can be prevented and resolved by you and your staff through simple, inexpensive measures. The cost and effort needed to prevent most indoor air quality problems is much less than that to resolve problems once they occur.

Symptoms of indoor air quality problems

Indoor air quality problems may affect several children and staff or just one individual, depending on sensitivity. Young children may be more affected than adults. The most susceptible children—and adults—include those with asthma, allergies, respiratory illness, and suppressed immune systems.

Symptoms commonly attributed to poor indoor air quality include:

- headaches, fatigue, and shortness of breath,
- sinus congestion, coughing and sneezing,
- eye, nose, throat, and skin irritations, or
- dizziness and nausea.

Linking symptoms to air quality can be tricky, but be alert to one or more of the following clues.

- Are symptoms widespread within a class or the school?
- Do symptoms disappear when children and staff leave the building for a day or an extended time?
- Do symptoms occur suddenly after some change such as painting or pesticide application?
- Do symptoms occur inside but not outside?

If in doubt, refer affected children and staff to a doctor. Consult with health professionals and building contractors to identify the sources of pollutants and remove them.

Pollutant sources

Indoor air pollutants can arise inside the building or come in from outdoors. See the box at right.

How to prevent problems

In *Caring for Our Children*, the National Resource Center for Health and Safety in Child Care and Early Education recommends the following:

- Open windows whenever possible (Standard 5.027).
- Indoor air is sometimes more polluted than outdoor air. Air circulation is essential to clear the air of infectious disease agents, odors, and toxic substances.
- Heat, cool, and ventilate all rooms children use to maintain the proper temperature, humidity, and air exchange (Standard 5.028).

During summer, the ideal temperature is 68 to 82 degrees Fahrenheit. During winter, the ideal temperature is 65 to 75 degrees. The year-round humidity should be 30 to 50

percent. Air exchange should be a minimum of 15 cubic feet per minute per person.

High humidity can promote the growth of mold, mildew, and other biological agents. You can measure humidity with simple and inexpensive devices that you can buy in hardware stores or in educational supply stores that specialize in science products.

- Clean or replace HVAC filters according to the manufacturer's instructions (Standard 5.031).

Clogged filters will hinder air circulation. High quality filters can trap particles and microorganisms.

- Have HVAC systems inspected before each heating and cooling season by a professional HVAC contractor (Standard 5.032).

Routine inspections and proper operation can ensure that equipment works properly. A contractor can arrange to test air exchange and air quality.

- Prohibit smoking by staff and visitors. (Standard 3.041).

Scientific evidence has linked respiratory illness to second-hand smoke. Infants and young children exposed to second-hand smoke are at risk for bronchitis, pneumonia, and middle ear infections when they have respiratory infections.

The U.S. Environmental Protection Agency offers the following guidelines in its *IAQ Tools for Schools Kit*:

- Make sure your facility is regularly and thoroughly cleaned.

Dirt, moisture, and warmth stimulate the growth of molds and other biological agents. Unsanitary conditions attract insects and rodents.

Typical sources of indoor air pollutants

Indoor sources

- Heating/ventilation/air conditioning equipment: microbiological growth in drip pans, ducts, and coils; debris in ductwork; improper venting
- Office equipment: emissions, including volatile organic compounds and ozone
- Kitchens: molds and other biological agents, carbon monoxide from improperly vented gas appliances, insects from improperly stored food or trash
- Bathrooms: molds and other biological agents
- New furnishings and flooring: gaseous emissions from paint and fabric
- Soiled and water-damaged furnishings and flooring: microbiological growth
- Art supplies: toxic emissions during use and storage
- Cleaning materials: emissions during use and storage
- Garbage: emissions
- Pesticides: toxic vapors
- Pets and insects: body wastes, droppings, dander

Outdoor sources

- Polluted air: pollens, dust, fungal spores, vehicle and industrial emissions
- Dumpsters: emissions
- Underground: pesticides, radon, leakage from underground storage tanks

Vacuum carpet and floor mats every day after children have gone home. Use vacuum bags made of material that will not permit the escape of particles 3 microns in size and smaller.

Dust with a wet cloth to prevent scattering dust in the air.

- Be alert to any leaks or signs of moisture on plumbing, interior surfaces, and roofs.

Stains and discolorations on ceilings, walls, and floors could indicate a moisture problem.

- Investigate odors. The need to use air fresheners may indicate a problem.

Follow licensing standards and local health guidelines for sanitizing diapering areas and bathrooms.

- Use art and schools supplies that are nontoxic.

Look for the seal of the Art and Creative Materials Institute, which certifies that the product has been evaluated for hazards. Or look for the words, "Conforms to ASTM D-4236," which indicates adherence to safety standards. Use products only as directed.

- Reduce the amount of dust and dirt by using floor mats at entrances.

Floor mats at entrances ideally allow people to make five full steps on the mat, catching dirt that otherwise might be spread throughout the school. Vacuum mats daily.

- Control pests using an Integrated Pest Management Program. See "Summer sanitation: Review basic practices to prevent disease," *Texas Child Care*, Summer 2005.
- Properly dispose of wastes. Line waste containers with plastic, and empty regularly. Use waste containers that can be sealed tightly. Place waste

containers in well-ventilated rooms, but not close to HVAC equipment.

Locate dumpsters away from air intakes, doors, and open windows. Position them where prevailing winds will carry odors away from buildings.

- Redirect vehicle traffic to minimize exposure to emissions.

Cars and vans can expose children and staff to exhaust fumes. Tell parents and bus drivers to avoid engine idling as much as possible. Reroute traffic away from playgrounds, open windows, and air intake of HVAC systems.

- During building renovation and repair, guard against the potential for indoor air quality hazards.

Demolition and construction can release many hazardous substances including asbestos, mold, lead from old paint, solvent fumes, fibers, and dust. Get more information from the Texas Department of State

Health Services, www.dshs.state.tx.us/programs/ppquery.asp.

Consider relocating children until renovation is complete, having work done only when your facility is not occupied, walling off construction areas, and other measures.

Select furnishings and equipment that won't give off emissions, and allow adequate time for out gassing before reoccupying the area.

References

Art and Creative Materials

Institute, www.acminet.org.

National Resource Center for Health and Safety in Child Care and Early Education, *Caring for Our Children*, <http://nrc.uchsc.edu/CFOC/XMLVersion/NewTOC/wo subs.xml>.

U.S. Environmental Protection Agency, *Indoor Air Quality Backgrounder: The Basics*, www.epa.gov/iaq/schools/tfs/pdf_files/backgrounder.pdf.