



Indoor Air Quality

When we think of air pollution, it is important to consider the air that is inside of our homes, workplaces, and other buildings. The Environmental Protection Agency has found that indoor air is two to five times more polluted than outdoor air, and considers contaminants in indoor air among the top five environmental risks to public health. Indoor air contaminants may have adverse effects on the health and comfort of infants, toddlers, preschoolers and the staff who care for them. Many health problems can be triggered by polluted air.

Young children and indoor air pollution

Young children are especially vulnerable to indoor air pollution. The same concentrations of pollutants can result in higher exposures to children because they breathe more air in proportion to their body weight than adults. Also, since children are growing and developing, the potential for damage to their respiratory and neurological systems is greater.

What are the health risks?

Some short-term health problems that may result from indoor air pollutants are headache, nausea, dizziness, infection and irritation of the eyes, nose and respiratory tract. Possible chronic and long-term effects include asthma, allergies, lung disease, cancer, and neurological damage.

What causes indoor air pollution?

- biological contaminants such as mold, dust mites, pet dander and cat saliva, pollen, rats and mice, cockroaches, bacteria and viruses
- gas stoves, wood stoves and kerosene heaters
- solvents, cleaning agents, air fresheners, cosmetics and perfumes
- dust from lead paint
- off-gassing of chemicals found in furnishings and consumer products such as carpeting and

upholstery, wood finishes, rug and oven cleaners, paints and lacquers

- art supplies such as glues, paints, dry erase markers and pens
- pesticides
- radon
- tobacco smoke and second-hand smoke

How can we reduce indoor air pollution?

Remove the source of the pollutant. Source control is the most effective, economical and time-efficient way to address indoor air quality.

Control moisture in the environment. Moist vapor, standing water and water-damaged materials are a breeding ground for mold, mildew, insects and bacteria. Prompt attention to moisture problems is essential to reduce the risk of adding contaminants into the air.

Provide ventilation. Ventilation means supplying outdoor air to the areas that are occupied by children indoors. Opening windows and safely using fans will provide ventilation. Windows should open no more than four inches and fans should not be accessible to children. When windows cannot be opened, rooms should be ventilated by a system that circulates air from outdoors. State laws set standards for the amount of fresh air that should enter the building during operation of the heating, ventilation, and air conditioning systems (HVAC). HVAC systems should be inspected to ensure that the vents that allow mixing of outdoor air are open. Failure to open the vents is common and results in unsafe indoor environments.

Maintain and inspect heating and air conditioning systems. Never burn charcoal indoors. Fireplaces, furnaces, gas heaters, air conditioners and ventilation systems need to be clean, dry and in good

repair. Filters should be changed regularly. Make sure that vents in HVAC systems are open.

Review custodial and housekeeping practices. Vacuum and damp mop for dust which may contain lead, dust mites, pesticides and other contaminants. Use proper dilutions for cleaning products and use products only for their intended purpose. Read labels and buy the least harmful product available. Products labeled “warning” or “caution” are less harmful than those labeled “poison” or “danger.” Choose cleaning products with fewer fumes such as baking soda and vinegar. Avoid products in aerosol sprays. Don’t use air fresheners—they do not improve air quality and use artificial chemicals.

Equip craft areas properly. Use art supplies such as glues and paints outside or in ventilated areas. Do not use materials that create toxic fumes or gases. Read the labels, as they are required to identify hazardous ingredients. Don’t store open, unused paints and craft materials. Supervise children closely.

Use pesticides only as a last resort. Use Integrated Pest Management (IPM) rather than spraying pesticides (for more information see *Health and Safety Note: Keeping Children Safe from Pests and Pesticides*). Consult a specialist who is familiar with IPM.

What are useful policies for promoting indoor air quality?

Written policies show you are committed to providing a healthy child care setting and help avoid confusion when communicating with parents and staff. Communication about environmental issues is essential between caregivers, parents, grounds keepers, custodial staff and maintenance contractors. Policies may address:

- **Painting, renovations and repair.** Schedule these activities for times when children are not present. Test all painted surfaces for lead before painting. Choose licensed professionals with experience in dealing with lead paint and proper disposal of debris. Volunteers, although well meaning, are often not aware of the environmental risks to young children.
- **No smoking.** This includes all adults. Adults who live in the home of a family child care program as well as parents, relatives and staff should be aware of this policy.
- **Pest management.** Use IPM techniques.

- **Ventilation.** Arrange your space to provide adequate ventilation to high-need areas such as arts and crafts areas and diaper changing areas. Install window guards for safety. Regularly inspect and maintain HVAC systems.
- **School supplies and purchasing choices.** Purchase least toxic supplies. Install new products such as carpeting and furniture when children are not present, and provide ventilation for 48 to 72 hours after installation. (AAP, 2003) Choose low emission products.
- **Sanitizing and cleaning products.** Decide what products you will use for cleaning and sanitizing. Keep products in their original containers. Keep all chemicals out of the reach of children.
- **Pets.** Determine if you will allow pets in your program. Confine pets to a limited area that is easily cleaned.

Are air purifiers helpful?

Many products are sold as air purifiers. Ozone generators purposely introduce ozone into the air. Ion generators may introduce ozone into the air as a byproduct. Ozone can be harmful to children, so these devices are not recommended. Air filtration systems, if properly maintained, can be used as an adjunct to source control and adequate ventilation. Effective control at the source of pollution remains the most important step in maintaining air quality. (AAP, 2003)

Resources and References

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