Asthma and Indoor Air Quality in the Home

On average, adults and children spend 90% of their time during the week indoors and the majority of this time in the home. Children can be exposed to many asthma triggers in their homes. The presence of uncontrolled environmental triggers causes irritation to the lungs and can lead to asthma, allergies, and other health threatening conditions. Triggers in the home include:

MOLD
Mold spores and bacteria, found in the air, in settled dust, on surfaces, or behind walls have been significantly associated with increased prevalence of respiratory symptoms and decreased lung function among asthmatic children.[1-19] Mold and bacteria problems are at their worst in certain conditions, such as when there is moisture damage or higher indoor relative humidity.

COCKROACHES AND RODENTS
Cockroach and rodent (mouse, rat) allergens in kitchens and bedrooms have been linked to increased asthma symptom prevalence and severity.[20-39] Intervention studies have demonstrated that professional cleaning and bait traps reduced measured levels of these pest allergens.[40]

DUST MITES
Dust mites, especially when there is inadequate ventilation and higher relative humidity, have been consistently associated with both allergic sensitization and increased asthma symptom prevalence and severity.[27, 29, 41-58] Intervention studies have shown dust mite allergen levels are reduced by polyurethane-coated covers on mattresses, quilts, and pillows as well as by removal of carpets and rugs.[54, 59-74]

PETS
Pet allergens, such as from dogs and cats, can collect in dust on smooth floors, upholstered furniture, and especially on carpets or rugs. Some studies have reported significant associations between pets and asthma symptoms,[27, 30, 55-56, 75-84] but others have not.[34, 75, 82, 85-90] Intervention studies have reported that some air filtration devices and the removal of carpet or rugs reduced levels of pet allergens in the home.[72, 91]

GAS STOVES AND SPACE HEATERS
Indoors, nitrogen dioxide (NO2), which can be emitted from unvented, improperly operating gas-fired stoves and space heaters, has been shown to increase allergic sensitization and susceptibility to asthma attacks.[92-96]

TOBACCO SMOKE
Environmental tobacco smoke, or secondhand or passive smoke, is produced when individuals use tobacco products inside the home or too close to open doors and windows. Tobacco smoke has consistently been shown to increase both allergic sensitization and subsequent asthma attacks. This is true for people who smoke tobacco and for those exposed to environmental tobacco smoke or whose mothers smoked when pregnant.[1, 8-9, 27, 83, 97-106]

POLLEN

Studies have shown that pollens from trees, grass, buckwheat, and flowers can increase the prevalence of asthma symptoms in children with asthma.[107-130] Pollens enter the home outside through windows, doors, and possibly through ventilation systems with inadequate particle filtration.

WHAT CAN BE DONE ABOUT ENVIRONMENTAL TRIGGERS IN THE HOME?
Community Action to Fight Asthma (CAFA) is a network of asthma coalitions in California working to shape local, regional, and state policies to reduce the environmental triggers of asthma for school-aged children where they live, learn, and play. A few examples of local and state policy include efforts to:

- Establish asthma guidelines for housing authority agencies and housing code inspectors, and improve inspection and remediation practices.
- Promote clean indoor air programs and policies for private and public landlords and tenants.
- Promote "green" construction policies for new public housing.
- Engage tenants to be stronger advocates and spokespersons for indoor air quality improvement policies and tenant rights.

Please go to our website at www.calasthma.org to learn more about Community Action to Fight Asthma, connect with local coalitions, locate asthma resources across California, and sign up for our newsletter.

ONE IN EVERY EIGHT DWELLING UNITS IN CALIFORNIA IS SUBSTANDARD.
—California Department of Housing and Community Development[131]

FOOTNOTES

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