



ENVIRONMENTAL HAZARDS UNIT BOSTON HEALTHY HOMES PARTNERSHIP

GLOSSARY

Air Conditioning

Air conditioning can control temperature and humidity levels in the home. It is best to buy an air conditioner that is the right power for the room you want to cool. For example, an air conditioner with a rating of 5,000 to 5,500 BTU's will cool an average sized bedroom of 10' by 12'. Therefore, before you buy an air conditioner, measure the rooms you want to cool and bring that information to the store.

Asthma Trigger

An asthma trigger is anything that can cause an individual with asthma to have an asthmatic attack. Triggers include tobacco or other smoke, pet dander (tiny particles that are shed from animal feathers, hair, or skin), dust mites, cockroaches, mold, chemicals, and cold temperature. A major effort of this project is to identify and eliminate the asthma triggers in your home.

Carbon Dioxide

Carbon dioxide is a normal atmospheric gas present outdoors at approximately 375 parts per million. Carbon dioxide is exhaled when people breathe out and can accumulate in homes with poor ventilation. An indoor level greater than 800 ppm can mean your home has inadequate ventilation. Carbon dioxide levels may reach higher levels during the cold weather, when windows are usually closed.

Carbon Monoxide

Carbon monoxide is a gas released during the burning of fuels in open fires, appliances, and internal combustion engines, like cars. Inhaling too much carbon monoxide can cause fainting, brain damage, or even death.

The national ambient air quality standard for carbon monoxide is 9 ppm (parts per million). Therefore, values below 9 ppm are safe.

Cleaning Agent Warning

Many cleaning products contain potentially harmful chemicals, especially for sensitive people like asthmatics. This section describes how to safely and effectively use these common household chemicals.

We advise using household chemicals in a well-ventilated area. Some cleaning agents containing ammonia and chlorine (like Clorox bleach) can release gases that trigger asthma attacks. Therefore we recommend using mild detergents such as ordinary dishwasher soap and water.

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If you choose to use ammonia, add 1/4 cup of ammonia for every gallon of water. This concentration is strong enough to kill all bacteria, but releases minimal amounts of gas into the air.

If you choose to use bleach, add 1 cup of bleach for every 10 cups of water (1:10 ratio). This concentration is strong enough to kill all bacteria, but releases minimal amounts of gas into the air. Be sure to wear gloves when using bleach to protect your hands. Also, avoid getting the bleach-water mixture on your clothes because it can ruin clothing.

If you have products containing ammonia or bleach at home, **never** mix them together. A dangerous, sometimes deadly gas is released when you mix these two chemicals together.

It is better to flush cleaning solutions down the toilet instead of pouring them down the kitchen or bathroom sinks. We recommend that you open the windows while you clean to provide adequate ventilation by letting fresh air into the room.

Clothes Dryers

Unvented or improperly vented clothes dryers can create a large amount of dust and humidity. They are also a fire hazard. If a dryer is not vented outdoors, it is strongly recommended to not use the dryer until it is properly vented. In addition, a gas powered clothes dryer can be a carbon monoxide emissions hazard. Therefore it is recommended to have a carbon monoxide monitor installed if you own a gas powered clothes dryer.

Dust Control and Dust Mites

Indoor dust is made up of outdoor dust plus human residues such as dry skin flakes. Dust mites are extremely small organisms that feed on these skin flakes. Dust and dust mites are both asthma triggers. There should be as little visible surface dust in the homes of asthmatics as possible, especially in the bedroom of anyone that has asthma. Dust and dust mites thrive in carpeting.

To control dust, it is preferable to use a vacuum cleaner (open windows if possible) or a damp mop. Two simple steps can be taken to ensure that a vacuum cleaner will work effectively. The first is to check that the brushes do not move very easily. If they do, there may be a belt that requires replacement. The second step is to replace full bags. Full bags do not allow the vacuum cleaner to collect dirt and dust effectively. A new vacuum cleaner bag should instantly inflate when the vacuum cleaner is turned on. A bag that does not inflate indicates that the vacuum cleaner is blocked. Remove the blockage before continuing to vacuum.

Heating Systems

Three of the most common heating systems found in homes in the Boston area are forced hot air, forced hot water, and steam heat. All heating systems can be a source of odors and potentially serious contamination of the home including asthma triggers.

Forced hot air heating systems are designed to heat air in a furnace and move the air through vents/ducts and into the house. It is easiest to identify a forced hot air system by vents or registers in the floors or walls of your home.

A forced hot water heating system heats water in a boiler (often in the basement) and distributes the hot water through pipes into radiators. The hot radiators heat the air in the home. It is easiest to identify a forced hot water system if you have radiators and pipes that lead to the radiators.

Steam heating systems are similar to forced hot water systems. However, the boiler heats the water until it is steam. The steam condenses into water in the radiator and the water returns to the boiler for reheating. Loud noises or ‘gurgling’ from the radiator indicates that water may be trapped and the system should be checked.

Humidifiers

Humidifiers can contribute to higher moisture levels in the home. In addition, they are an ideal environment for mold growth. Many doctors prescribe humidifiers when a baby is sick. Otherwise, it is not recommended to use them. If they are used, aggressively clean them after each use, rather than a less frequent interval.

Integrated Pest Management (IPM - Rodent, Cockroach and Insect Control)

Integrated Pest Management (IPM) is a common sense approach to managing pests (mice, rats, cockroaches, ants, flies, and other pests) that uses a variety of methods to control pests.

The following list describes IPM practices:

- Immediately clean rodent droppings or when they are found. Also, clean dead cockroaches or cockroach feces as soon as they are found. By cleaning the mouse droppings or cockroaches daily, you can observe where the pests are active.
- Keep counters and tables wiped clean and your dishes washed. Do not leave food, leftovers, or used pots and pans out.
- Keep all foods and waste in “pest proof” containers like hard plastic, metal, or glass. Store these food containers on shelves.
- Keep trash covered when in the house and empty it frequently. Store trash outside the house if possible. Trash should be stored in lined bags and the lids on your trashcans should be tight. Disposal of trash should be frequent, no less than one time per week.
- Seal holes and cracks. Mouse holes can be as small as the size of a dime. Use steel wool caulk or screens to block holes and cracks.
- Check traps frequently for evidence of pests.
- Observe locations where the cockroaches are active so the licensed pest control operator can effectively treat the harborages.

A harborage is an area or place where mice, cockroaches, and other pests live, eat, and give birth to their young. Harborages include areas that are difficult to keep clean, including clutter, trash, damp and dark areas, drop ceiling tiles, wall coverings, electrical sockets, crevices, pipes, broken flooring, stoves, carpets, and pantries. Aggressive cleaning and sanitation helps eliminate and control harborages.

IPM may use chemical pesticides. However, emphasis is made on preventing pest problems by controlling the conditions which may attract and support pests such as food, water, and harborage (places where pests live in the home). It also limits and blocks access of pests into and throughout the building. IPM is most successful when everyone in the building (tenants, owners, visitors, pest

control professionals, and contractors) work together in maintaining the building and creating a clean and sanitary home.

When using traps to control mice infestation, be sure to place them along the perimeter of the room and in hidden places, such as behind your refrigerator, cooking stove, and cabinets. The best mousetraps are the ones that actually kill mice; good reusable ones can be found at any hardware store.

For serious rodent, cockroach, and other pest problems, a licensed pest control professional should be used routinely until the problem is under control. Please be sure to ask the pest control professional to use *integrated pest management*.

Mold and Mildew

Mold and mildew are signs of water damage and/or excessive humidity in your home. Mold and mildew are often asthma triggers. Often they can look like grey-black powder near the water-damaged areas. When attempting to rid an area of mold and mildew, it is most important to find and eliminate the water source first. The water and humidity sources need to be eliminated to get rid of mold and mildew permanently.

Mold and mildew are commonly found in bathrooms. When showering, it is important to either open a window in the bathroom (slightly opening the window during cold weather is effective), or to have a properly working ventilation unit operating. Otherwise, it is likely that mold growth will occur in the bathroom in time.

Nitrogen Dioxide (NO₂)

Like carbon monoxide, burning fuels creates nitrogen dioxide. Nitrogen dioxide comes from outdoor combustion sources and motor vehicle operation. Additionally, it can come from gas cooking ranges, stoves, fireplaces, furnaces, and smoking. The national air quality standard for nitrogen dioxide is .050 ppm. NO₂ levels in the home are typically between .010 ppm and .030 ppm.

Exposure to nitrogen dioxide is associated with lung damage and asthma. Opening the windows slightly when cooking or installing a hood over the stove that exhausts outdoors may help keep nitrogen dioxide levels low.

PM₁₀

PM₁₀ stands for particulate matter (dust and other dust-like materials) that is small enough to be inhaled into the deepest part of the lungs, and can cause problems for people's health. Outdoor PM₁₀ levels tend to vary, depending on conditions such as wind or traffic. Daytime dust levels are often higher than evening levels. The ambient air quality standard is .05 mg/m³ (long term) and .150 mg/m³ for a single 24-hour period. It is common to find outdoor dust levels that are temporarily high. Annual outdoor averages are much lower. Possible sources of elevated indoor PM₁₀ levels are inadequately vented furnaces, heating ducts and dryers. In addition, open windows can allow pollen, dirt and particles into the home.

Relative Humidity

Relative humidity is how damp the air is. High indoor humidity can promote mold growth and makes it harder for the body to cool itself. A range of 30 - 60% humidity is desirable in the home.

Mold growth may become evident if levels persist above 60%. High humidity can also increase dust mite population (dust mites are extremely small organisms that feed on skin flakes).

Temperature

A range of 68 – 75 Fahrenheit in the cold weather and up to 80 Fahrenheit in the summer is considered acceptable for comfort. Higher temperatures can affect relative humidity levels (see below). Extremely high or low temperatures can sometimes trigger asthma episodes for asthmatics.

Massachusetts law requires that, during the heating season (October 15th to April 15th), residences must be heated between 64F and 68F in the evenings (11:00PM to 7:00AM) and 68F and 76F during the daytime.

If you find the home uncomfortably hot or suffer from heat stress, you may consider getting an air conditioner (see "Air Conditioning" for more information). Fans help to increase air circulation and cool the air, but they increase airborne dust and may aggravate asthma.

Tri Sodium Phosphate

Tri Sodium Phosphate (TSP) is a common chemical found in the hardware store that effectively cleans and eliminates mold growth. If you choose to use this, take the proper precautions. Follow the directions on the label and wear gloves.

Volatile Organic Chemicals

Volatile Organic Chemicals (VOC's) can aggravate respiratory problems like asthma. There are currently no standards for volatile organic vapors in private homes. The levels of organic vapors in the outdoor air are typically 70-100 ppb. Indoor air averages range between 150-300 ppb. High levels can be due to inadequate ventilation in the home or recent cleaning with household chemicals.

VOC's are found in common household items such as air fresheners, glass cleaners, and beauty products (hairsprays and colognes). Anytime these products are used, it should be in a very well ventilated area (open the windows if possible). We recommend storing and using them in an area where people will not be exposed. Reducing the number of cleaning products and cosmetics that are used will help reduce volatile organic chemicals.