



Green Living and Housekeeping

Proactive, consistent and healthy maintenance practices can make the difference between a healthy environment and a building with significant indoor air quality (IAQ) and environmental problems. Strategic maintenance can also reduce operating costs and increase the longevity of buildings and equipment. This fact sheet discusses strategies and techniques that anybody can implement toward healthy, green living.¹

Impact on Occupants and the Environment

Poorly or improperly maintained buildings have a significant impact on the occupants' health and well-being. People have learned to keep their houses clean in order to avoid diseases and infection. To help us do this, we have created a wide variety of cleaning products and disinfectants. The problem is that our zeal to be clean is sometimes misplaced. Today, the cleaning product is frequently more dangerous than the things we are trying to clean up. Many common household products contain alcohols, ammonia, bleach, formaldehyde, and lye. These substances can cause nausea, vomiting, inflammation and burning of the eyes, nose, throat, and respiratory system, and are linked with neurological, liver and kidney damage, blindness, asthma, and cancer.

Cleaning chemicals and pesticides routinely find their way into drinking water, lakes, and streams, adversely affecting plant and animal life and threatening public health. In addition, cleaning products, paints, furniture, and carpets emit significant amounts of Volatile Organic Compounds (VOCs), which can trigger respiratory problems such as asthma, contribute to smog formation, and inhibit plant growth.

Green Living Strategies

Green housekeeping focuses on health issues and the need to understand the building and its occupants.

¹ See also the Green Affordable Housing Coalition fact sheet #7, IAQ

Keep your home as free from chemicals as possible.

Formaldehyde and VOCs are often found in building materials and cleaners used to maintain buildings. Such toxic and hazardous substances contribute to poor indoor air quality and health concerns for building occupants. When choosing carpets, adhesives, cabinetry, furniture, and other building materials and furnishings, look for those with the lowest VOC content and free from urea formaldehyde. Choose cabinets and furniture made of exterior-grade plywood (CDX) or natural woods instead of particle board or medium-density fiberboard (MDF). Consider using materials and systems that need minimal finishing or none at all, like ceramic tile or natural plasters.²

Paint is an easy way to spruce up your home and make it look clean. Sometimes though, simply washing walls and/or using a little touch up paint can make them look like new. When it is necessary to paint, it is important to understand the potential health effects of paints and make your selections carefully.

Paint is applied wet and must undergo a drying process, and sometimes a chemical reaction, in order to form a solid paint film on the surface. It is during this drying or chemical process that VOCs and other paint components are given off. When these VOCs evaporate or "off-gas", they may cause a variety of health problems like nausea, dizziness, irritation of the eyes and respiratory tract, and more serious illnesses including heart, lung or kidney damage and even cancer.

Use No- or Low-VOC latex paints rather than oil-based paints to minimize paint fumes (off-gassing VOCs) and eliminate the need for toxic solvents for cleanup. The Green Seal standard for VOC limits in commercial flat and non-flat paints (GS-11) are:

| Paint Type | VOC Limits (g/L) ³ |
|------------|-------------------------------|
| Non-flat | 150 |
| Flat | 50 |

² See also the Green Affordable Housing Coalition fact sheet #3, Cabinets

³ Grams per liter

Always use high-quality paint. Choose colors with versatility in mind and remember that a more durable paint is less expensive in the long run. Proper preparation is also critical for a durable paint application. And make sure to choose primers and top coats that are compatible. Apply paint only when occupants are not present and always ventilate, even with water-based paints. Minimize the presence of soft materials (like fabrics, pillows, etc.) during and just after painting. If present, they will “absorb” some of the VOCs from the paints and re-distribute them into the air later.⁴

Minimize chemical exposure due to household cleaning products.

Commercial household cleaners often contain harsh chemicals. Non-toxic, non-chemical alternatives such as baking soda, borax and distilled white vinegar are not only healthier, but also cheaper to buy and use. If you do use commercial cleaning products, there are a number of less toxic alternatives which can be found at organic and natural grocery stores, co-ops, and many larger conventional stores as well. Organic and biodegradable products are generally the safest. Natural products tend to be the next safest, with conventional cleaners and disinfectants being the least safe. Look for **CAUTION**, **WARNING** and **DANGER** as signal words, and buy the least-toxic products you can find. Of the three, products labeled **CAUTION** contain the least toxic ingredients.

Practical advice and safer alternatives for common cleaning applications:

- **Laundry Detergents.** Only use laundry soaps labeled "fragrance free," and choose dish and laundry detergents and all-purpose cleaners that are plant-based (corn, palm kernel, or coconut oil). To remove stains from clothing, try soaking fabrics in water mixed with borax, lemon juice, hydrogen peroxide, washing soda, or white vinegar. Fabric can be softened by adding one-quarter cup of baking soda to the wash cycle.
- **Soap.** Popular in liquid form, antibacterial soaps are helping to promote growth of resistant bacteria, according to a 2000 World Health Organization report. Instead of using antibacterial soap, wash hands thoroughly with plain soap and warm water.
- **Disinfectants and Scouring Powders.** Scrubbing sinks, tubs, and countertops with a

paste of baking soda and water effectively removes dirt rings and some stains; if that doesn't work, try a paste of washing soda and water, and be sure to wear gloves.

- **Glass Cleaners.** For cleaning windows, fill your own spray bottle with water and either one-quarter cup white vinegar or one tablespoon lemon juice to cut grease.
- **Drains.** A plunger "snake" plumbing tool should first be used to bring up as much of the clog as possible, giving cleaning products room to work, or perhaps eliminating the need for them entirely.
- **Oven Cleaners.** Coat oven surfaces in a paste of water and baking or washing soda and let stand overnight, then scrub off the paste while wearing gloves.
- **Toilet-Bowl Cleaners.** Use the simple, non-chlorine scouring powders and creams listed above.
- **Furniture and Metal Polishes.** Polish furniture with a mixture of one teaspoon olive oil and one-half cup white vinegar, or look for solvent-free products that use mineral or plant oils. Silver can be kept clean with toothpaste. Copper can be polished using a cloth dipped in white vinegar or lemon juice with salt dissolved in it; just rinse with water when you're done. You can shine brass with a paste made from one teaspoon salt, one cup white vinegar, and one cup flour.
- **Dry cleaning.** Most dry cleaners use perchloroethylene (PCE or “perc”), which is a known carcinogen and frequently found in contaminated groundwater. Try to minimize exposure to dry-cleaning chemicals by having your clothes laundered. When necessary, patronize a progressive fabricare professional who uses innovative wet cleaning techniques to remove stains without damaging delicate fibers.

Minimize the use of chemical pesticides.

Pesticides are poisons designed to kill insects or other pests. They can cause severe reactions in humans as well, ranging from nerve damage to cancer or even death. Fortunately, many pest problems can be controlled without chemicals, by using a combination of good housekeeping, home maintenance, and least-toxic pesticide applications. If infestations are present use safer products such as boric acid, diatomaceous earth or baits with growth regulators.

⁴ See also the Green Affordable Housing Coalition fact sheet #10, Paints.

Pests go where they find food, water and undisturbed shelter. Practice good home maintenance to eliminate most pest problems. Inside the building:

- Clean regularly and reduce clutter.
- Put away all food immediately (in sealed jars if necessary).
- Eliminate water where it doesn't belong. Fix all leaks. Reduce humidity.
- Seal all gaps and cracks.

Outside the building structure:

- Be sure water drains away from the foundation.
- Don't raise the soil level around the foundation when you prepare planting beds and keep soil at least 12 inches from any wood products.
- Keep trees and bushes pruned away from the foundation, roof, and walls.
- Remove all construction debris.
- Don't store firewood near the house, and don't keep it longer than one season.
- Keep exterior in good repair. Caulk and seal any cracks, seams, and holes in the foundation, house exterior, and duct work.
- Be sure all operable windows have well-fitting screens in good repair.
- Inspect for signs of termites such as mud tubes or tunnels on outside of foundation and soft spots in wood, especially beams.

In the surrounding landscape:

- Keep plants healthy--they'll be less vulnerable to insect attack.
- Choose a wide variety of native plants. This deters pests and attracts helpful bugs.

Keep the house free from dust buildup and install entryway systems.

Dust contains dust mites (tiny insects that feed on human skin flakes and detritus), pollen, and other contaminants, which are major causes of allergic reactions and asthma attacks. Use micro fiber mops and cloths that reduce the need for cleaning chemicals and HEPA-filtered vacuum cleaners to reduce air-borne particulates. Use the best quality air conditioning filter you can afford - pleated-media or HEPA filters are 4 to 20 times more effective than standard panel filters in removing dust particles from the air. If someone in your household suffers from

asthma or severe allergies, consider eliminating wall-to-wall carpets.⁵

Leave the outside, outside. The soils around the home can be contaminated with hazardous chemicals from automobile exhaust, pesticides, various other chemicals, or dust from lead paint. Utilize entryway systems (grills, gates, mats, etc.) to reduce the amount of dirt, dust, pollen and other particles entering the building at all entryways. By simply removing shoes at the doorway or using a doormat, indoor contaminants can be significantly reduced. Try also to avoid plants, trees and bushes in building entrance areas that are varieties that yield berries, flowers and leaves that are likely to be tracked into the building.

Reduce, Repair, Reuse. Recycle as a last resort. And ... think before you buy.

Recycling, including composting, diverts millions of tons of material from landfills and incinerators every year according to the EPA. The benefits of recycling include conservation of resources, prevention of greenhouse emissions and other pollutants, saving energy, creating jobs, stimulating development of greener technologies, reducing need for landfills, etc. Although there is no doubt that recycling is beneficial to our environment, it should be practiced after you've reduced and reused.

Finally, buy local products to support the local economy and reduce transportation impacts, buy products with less packaging, buy in bulk to save money and embodied energy, and just buy less.

Not everyone will be able to make all these changes - however, every change you make will have a big impact! This way of living is better and safer for you. It is also much better for the environment! Switching to non-toxic living can be a very pleasant and rewarding experience if we view it as a return to the way our ancestors lived.

For more information

- Care2 is an online network for people who interested in a variety of health, environment, and social issues
<http://www.care2.com/channels/lifestyle/home/>
- Green Seal (www.greenseal.org) encourages the purchase and production of environmentally responsible products and services.

⁵ For more information, see the Green Affordable Housing Coalition fact sheet #1, Air Filters.

- Healthy Homes Partnership: Help Yourself to a Healthy Home
<http://www.uwex.edu/healthyhome/topics.html>
- Healthy Building Network
<http://www.healthybuilding.net/>
- U.S. Environmental Protection Agency (EPA) Indoor Air Quality Program
<http://www.epa.gov/iaq/index.html>
- For more information about the Coalition, visit our website at www.greenaffordablehousing.org or call Bruce Mast at 510-271-4785.

Disclaimer

Development of this fact sheet was funded by California ratepayers under the auspices of the California Public Utilities Commission (Commission). It does not necessarily represent the view of the Commission, its employees, or the State of California. The Green Affordable Housing Coalition, the Commission, the State of California, its employees, contractors, and subcontractors make no warranty, express or implied, and assume no legal liability for the information in this report, nor does any party represent that the use of this information will not infringe upon privately owned rights. This report has not been approved or disapproved by the Commission, nor has the Commission passed upon the accuracy or adequacy of the information in this report. Contents are provided for general education and informational purposes only. The actual suitability and applicability of this information for a given use depends upon a host of project-specific considerations. The Green Affordable Housing Coalition strongly encourages the reader to consult with a construction professional and/or product supplier before applying any of this information to a specific use or purpose.