

Home Be Greened?

Real People + Real Problems + Real Solutions

Carol Venolia

Five years ago Jocelyn Chapman bought her 1958 ranch-style home in Santa Rosa, California, from its original owner. The living room windows look out over rolling green hills, and the backyard opens onto a wild park—not bad for an urban residential neighborhood.

After living there for a while, however, Jocelyn noticed the living room was cold in winter, the heating bills were huge, the asbestos-cement siding looked poor, and water pooled on the garage slab. Furthermore, she learned that her chronic sniffing was the result of allergies to pollen, dust mites, cat dander, and mold. Unsure where to begin, she contacted *Natural Home*.

Getting cozy

Upon entering the house, I could see why the living room was thermally vulnerable: It has three exterior walls with picture windows facing north and south and a brick fireplace on the east wall. The north window is a large expanse of heat-losing, single-pane glass, while the south window is smaller and double-glazed—a possible source of solar heat if it weren't for a deep awning and a tree that block most of the sunlight. The fireplace allows heat to escape on cold days. Without doors, not only does warm air go right up the chimney, but the mass of brick has virtually no insulation value.

Investigation of the attic turned up the first good news: a few inches of blown-in cellulose insulation installed by previous owners. That's not enough for northern California's climate but it's a start.

My first suggestion was to increase attic insulation throughout the house; a trained professional should thoroughly inspect the existing attic and insulation (wearing protective gear), looking for water damage, rodent droppings, or other potential problems. If everything looks dry, clean, and uninhabited, insulation can be added on top of what's already there. If not, it's important to remove the existing insulation, vacuum out all debris, repair leaks, seal cracks, and start over with fresh insulation.

I next recommended that Jocelyn recycle the north-facing window, replacing it with wood-frame, low-E, double-pane windows. To control costs, I suggested that she explore salvage yards and the “bone piles” of building supply stores, where affordable wood windows are often available.

To take advantage of that southern living room window, I advised Jocelyn to remove the awning and prune the tree. If summer shading is needed, she can install a retractable awning or add a trellis above the window and grow a deciduous vine on it.

Finally, Jocelyn can turn her fireplace from a heat sink into a heat producer by installing an EPA-rated fireplace insert. Minor fixes such as adding glass doors or a heat exchanger reduce heat loss only slightly. The first question is whether to burn wood or gas. Because Jocelyn doesn't have a desire to manage firewood—and because a gas line enters the property near the living room—a gas fireplace insert is the appropriate choice.



Photos by Carol Venolia

Homeowner Jocelyn Chapman and Jyoti Germain, a volunteer from the local Backyard Wildlife Habitat program, discuss creating a low-maintenance garden around Jocelyn's home.

A breath of fresh air

To deal with the complex subject of Jocelyn's allergies, we asked Mary Cordaro of H3Environmental for insights. First, Cordaro pointed out that there are three main routes of exposure to allergens—diet, inhalation, and skin contact—and that it's important to lower the total burden on all fronts.

There are no carpets in Jocelyn's house to harbor allergens, which is a plus, but Cordaro was concerned about the master bedroom being located directly over a garage that's dug into the hillside. The combination of garage moisture (which encourages microbial growth) and car exhaust fumes creates a toxic soup that can rise into the bedroom. She recommended removing sources of “food” for microbial growth (stored fabrics, wood, etc.) from the garage, removing any cabinets or stored items against retaining walls that may keep moisture from quickly and completely drying, getting a qualified professional to depressurize the garage with a fan system that sucks out more air than it brings in, and having an expert improve the drainage around the garage.

Next, Cordaro dealt with how to make the bedroom an allergen-free oasis. First, she told Jocelyn to keep her cats out of the room and have slippers that she wears only in the bedroom to keep

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from tracking in dander. She recommended discarding older upholstery that hasn't been regularly laundered, since it may be too hard to get the sticky cat dander out.

Jocelyn recently bought a Miele vacuum cleaner with a HEPA (high-efficiency particulate air) filter, and Cordaro told her to "deep clean" by first vacuuming every surface (horizontal and vertical) from ceiling to floor with strokes that overlap 30 percent. After vacuuming, she suggested using an enzyme-based cleaner that's safe for environmentally sensitive people called BOC (Biological Odor Control) made by Medina Agricultural Products to wipe down every surface. She can then follow up by spraying a mist of BOC into the room to help decontaminate the room from most of the cat dander and other allergens.

Jocelyn should then follow a regular maintenance program: Launder all bedroom fabrics (bedding, drapes, rugs, and upholstery); vacuum all surfaces; and mist the room with BOC. Jocelyn should also wash her sheets in 130 degree Fahrenheit hot water.

Cordaro recommended using an air filter with both HEPA filtration—to remove particulates down to 0.3 microns and a substantial carbon filter to deal with volatile substances. If Jocelyn also wants to minimize electromagnetic fields (EMFs), she can order an Aller Air unit with a shielded cable, specially made for H3Environmental. Cordaro cautioned against using ozone generators because ozone is a respiratory irritant and reacts with some chemicals. She also noted that negative-ion generators tend to produce ozone and EMFs, and they don't remove the finer particles that HEPA fil-

ters address. She advised keeping a bedroom window cracked to let in fresh air, but not so much as to overwhelm the filters with pollen in spring; in non-pollen seasons, opening windows for lots of ventilation is good.

Finally we got to the bed itself, where body warmth and moisture combine with skin flakes (we lose dead skin constantly) to create a perfect environment for dust mites and fungal growth. These microscopic irritants enter the respiratory system where they can trigger allergic reactions.

The best solution is bedding made with wool batting, but if Jocelyn can't afford that right now, Cordaro recommended encasing the mattress, pillows, and comforter in barrier covers made from a type of fabric that keeps dust mites in. A wool topper over the encased mattress would



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further improve conditions. As money allows, Jocelyn can then replace her pillow, comforter, and eventually mattress with products that contain wool batting.

Cordaro explained that untreated organic wool batting is the best material to sleep with. Wool wicks moisture away from the body and out of the mattress, and it's naturally dust mite resistant. Her favorite mattress (which H3Environmental carries) has a core of natural latex wrapped in organic wool batting and covered with organic cotton ticking. She added that there should be no metal in the bed; metal becomes magnetized and radiates disruptive EMFs. Cordaro's final advice was that Jocelyn regularly air her bedding in the sun to keep it fresh; mold and dust mites prefer dark, cool places.

The final touch for both energy efficiency and clean air is to balance the home's airflow. Jocelyn's furnace is only three years old, so there's no need to replace it, but whenever you alter airflow—as she would be doing by insulating, sealing cracks, installing a fireplace insert, using an air filter, and depressurizing the garage—it's important to balance the air pressure to avoid sucking flue gases or garage and attic air into the home. This also provides an opportunity to seal all the penetrations in her “return” ducting and heater and to add fresh-air dilution and possibly HEPA fil-

tration to the heating system. (Sealing all the return ducts will prevent them from quickly getting dirty again.) A qualified heating and ventilating professional trained in building science should do this job.

Putting a new face on it

With indoor issues addressed, we could now turn to the home's exterior. Jocelyn's asbestos-cement siding was in good shape, so there was no need to remove it; if it had been broken or flaking, removal might have been appropriate to avoid introducing asbestos fibers into the air. Fortunately, this siding needed only a facelift.

Jocelyn's painter was reluctant to use exterior paint with lower VOC levels than the already-low California standards because of durability concerns. A consultant from the Green Resource Center's free “Ask an Expert” hotline recommended a recycled paint such as Recover by Dunn-Edwards or E-Coat by Kelly-Moore. Recycled paint has come a long way since the days of “recycled gray” and is now available in a range of attractive earthy colors.

To address the front yard, I invited Linda Ross and Jyoti Germain—two volunteers from the National Wildlife Federation's local Backyard Wildlife Habitat program—to make some suggestions. Jocelyn wanted a low-water, low-maintenance garden that

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wouldn't be eaten by deer. We suggested installing a solar-powered fountain as a centerpiece because it's a source of water for wildlife and it masks the sound of highway noise. Ross and Germain then recommended a range of deer-resistant, drought-tolerant, native-California plants that provide food, shelter, and nesting for birds, bees, butterflies, and beneficial insects: ceanothus, yarrow, columbine, artemisia, coreopsis, foxglove, lupine, matilija poppy, rudbeckia, California fuchsia, coffeeberry, and monkey flower. With a dash of creeping rosemary to cascade down the obsidian retaining wall in front, this garden will also nourish the human senses. ■■■

CAROL VENOLIA is an architect, author of *Healing Environments: Your Guide to Indoor Well-Being (Celestial Arts, 1988)*, and former publisher of *Building with Nature* newsletter. Share your experiences with her at carolv@naturalhomemag.com.

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