



THE SKIN CANCER FOUNDATION

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EXTENDS LIVES

THE EVOLUTION OF
MOHS
MICROGRAPHIC
SURGERY

SUNSCREENS:
SAFE &
EFFECTIVE?

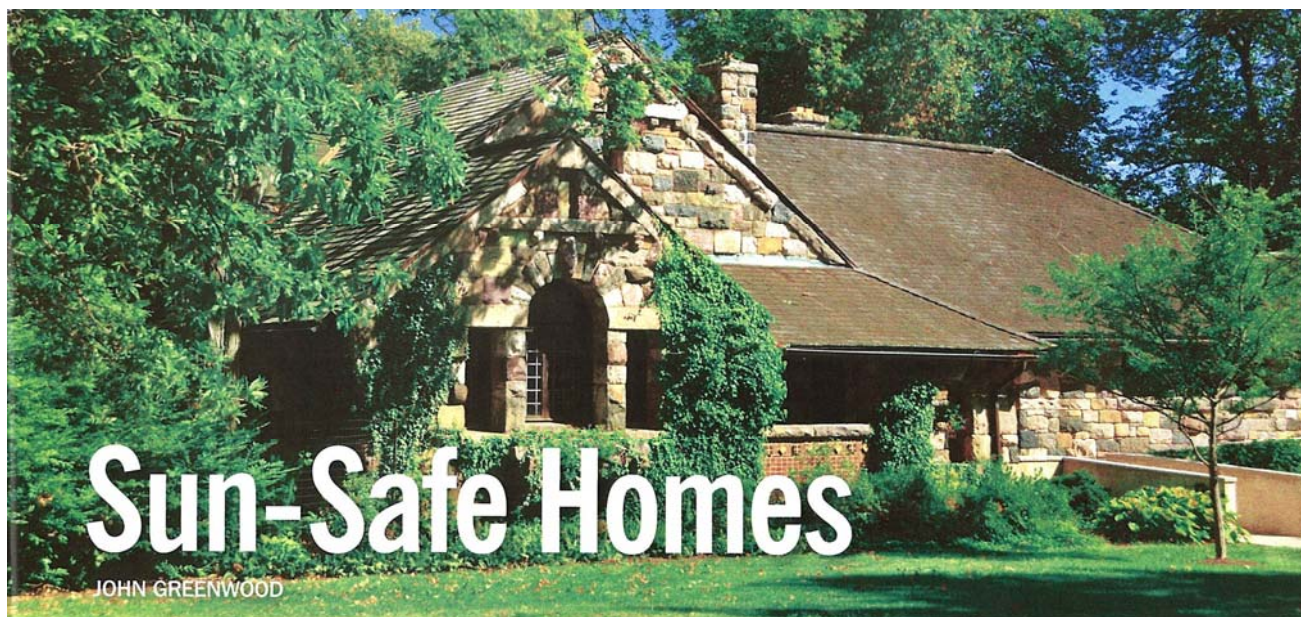
THE TALE OF TANNING

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www.SkinCancer.org



Sun-Safe Homes

JOHN GREENWOOD

If planned and developed correctly, shade strategies can reduce home UV exposure by about 75 percent.²

There is strong evidence linking the development of basal cell carcinoma, squamous cell carcinoma, and melanoma, the three most common skin cancers, to excessive exposure to the sun's ultraviolet (UV) radiation.¹ Since sun damage is cumulative over one's lifetime, finding everyday forms of UV protection is critical. This protection should begin with your own home. One of the most practical and strategic options for sun-proofing your home is shade.

THE CASE FOR SHADE AT HOME

Public authorities have become increasingly aware of the need for shade in public outdoor areas. Shade is now in place or on the agenda in many parks, sporting facilities, and schools as well as some workplaces. However, it has not been seen as high priority for homeowners, even though most residences have a range of outdoor areas where parents and children play, eat, rest and gather. Backyards, courtyards, terraces, decks, swimming pools, and other areas around the home should be adequately sun-protected.

Effective shade, along with sun-protected windows, can also help maintain comfortable and safe indoor spaces by preventing intense UV exposure, while still allowing natural light into the home. [See "Windows Need to Be Shaded, Too," page 67.]

KEY CONSIDERATIONS

Shade that does not provide adequate UV protection can create false security, leaving you at risk of overexposure. With some simple steps, however, you can create effective shade for both new and existing homes by **planning** and then **designing** appropriate solutions.

PLANNING:

SHADE ASSESSMENT METHODS

The first step in planning shade is to perform a shade "audit," assessing the amount, quality and effectiveness of existing shade. Begin by carefully considering all the outdoor areas you and your family use, how you use them, and the times of day you use them. Is there enough shade to cover *all* the people using them during their hours of use, especially between 10 AM and 4 PM?

A shade audit can be performed for existing homes by observation over time, or by using shade planning software such as WebShade (www.webshade.com.au/) [Figure 1].

Another aid in determining shade needs is the **UV Index**. Developed by the US Environmental Protection Agency, the Index measures the intensity of solar UV radiation everywhere in the US, rating it on a scale from 1-11+. (UV Index information for your location can be found at www.epa.gov/sunwise/uvindex.html.) Especially

when average UV Index levels are above 3 (typically April through November), key entities such as play structures and lounge chairs should have enough shade to cover everyone using them between 10 AM and 4 PM.

IS YOUR SHADE GOOD ENOUGH?

If you already have shade in these areas, is it providing adequate UV protection? Consider the elements providing the shade. Along with the shade cast by the house and other buildings, you may have installed items such as shade sails, awnings, and verandas [Figures 2, 3, and 4]. All shade materials should provide at least 94 percent "blockout" (screening out of UV), equivalent to an SPF (sun protection factor) of 16. Opaque materials such as timber, metal or tiles block 100 percent of direct UV radiation, and many suppliers can provide the blockout ratings of other materials.

In addition, your property may offer shade cast by natural elements, such as trees and vine-covered pergolas. If so, consider:

- the density of the canopy, as this will determine UVR blockout.
- the maturity of trees, as young trees create more shade over time as their branches and leaves fill out.



- whether vegetation is evergreen or deciduous (drops leaves in winter); the latter can be used in tandem with appropriate translucent roofing to maintain comfort through “warm shade” in cooler seasons. Remember, UV levels can remain high even when temperatures are cool.

When you analyze your property, carefully note activity areas without shade, or where shade fails to provide adequate UV protection. Before committing to new shade, consider if there are existing shade areas not in use — you may be able to relocate some activities.

DESIGNING SHADE

Once you have determined where new shade is required, you need to design effective solutions, meaning shade that:

- falls in the right place, at the right time.
- provides effective blockout of direct UV radiation.
- protects against indirect UV radiation (scattered by clouds and/or atmospheric particles, or which reaches an area after being bounced off of UV-reflective surfaces like sand, snow, ice, and concrete).
- will be comfortable to use in both summer and winter.³

BUILT AND NATURAL PROTECTION

Built shade can include fabric shade sails and awnings, pergolas, louvered

roofs, translucent and solid roofs, gazebos and verandas. Structures can be fixed, providing permanent shade, or adjustable, allowing the amount of shade to vary seasonally.

Materials such as polycarbonate and solar glass (glass specially treated with UVA-protective window film — see sidebar, p.67.) effectively block up to 99 percent of UVR while still transmitting heat and light.

Natural shade solutions such as trees, shrubs, vines and ground cover can provide effective and aesthetically appealing sun protection. Used along with translucent man-made UV-blocking materials, species that drop leaves in winter can provide safe UVR levels throughout the year — thicker coverage and shade during summer, with less shade allowing more heat in less sun-intensive months.

Talk to a horticultural specialist or local nursery for advice on suitable shade vegetation for your area.

SHADE IN THE RIGHT PLACE, AT THE RIGHT TIME

We all know that the sun moves throughout the day, and is at different heights in the sky throughout the year, but this is often neglected when designing shade. Shade structures and trees are often too small to be effective in early morning and late afternoon, when the sun is lower and hits the earth at a different angle than at high noon. Similarly, high structures

or trees with high canopies may cast shade well away from the desired shade area at various times of day.

EFFECTIVE BLOCKOUT OF DIRECT UV RADIATION

When building shade structures, be sure your materials provide at least 94 percent UV radiation blockout. Materials can vary widely in effectiveness. Most often, the denser the material, the better; a tightly woven shade cloth will generally offer more protection. Also, fabrics used for shading are rated by approved labs; these ratings should be part of the manufacturers’ specs.

The ideal translucent sheeting or roofing is polycarbonate. It is cheap, light, easy to support, and can be tinted to reduce glare as well as treated to exclude heat.

If you’re using natural shade, the protection provided depends on canopy density, since different trees and plants provide varying UV protection. One method is to look at the sky through the tree canopy or at the shade on the ground and match the density to one of the diagrams below⁴ [Figure 5].

BLOCKING INDIRECT UV RADIATION

Indirect UV radiation can come from any direction, so it is difficult to exclude completely. Since it can significantly increase overall exposure, it is important to limit indirect UV by:

- making shade structures of adequate size. Extending the shade



Residence

Optimum shade locations and configurations can easily be determined with shade planning software.



Shade sails over terrace



Folding arm awning

Well-designed shade enhances the home environment, resulting in spaces that are visually appealing and comfortable to use.

canopy by three feet past the actual area of use decreases risk.

- using barriers for side protection. Vertical screening using plants, trellises, shade cloth, polycarbonate sheeting or timber louvers will protect against indirect UVR.
- choosing materials that reduce reflectivity. Soft surfaces and uneven finishes reflect lower levels of UVR, while vegetation absorbs and scatters it, decreasing its intensity. Dense shrubs and small trees (6 to 12 ft. in height) situated outside a shade structure in the southern and western sectors decrease the amount of scattered UVR reaching the shaded area.

YEAR-ROUND COMFORT

Comfort is the key determinant in how people use outdoor spaces. Shade design must respond to climatic variation, or shaded areas will not be used. Local climate characteristics, including temperature, humidity, wind, and annual UV Index variations, are important factors in planning and designing a shade system to provide UV protection and outdoor comfort during all seasons.

In many parts of the US, cool shade is desired for summer, but during spring and fall, people outdoors will seek sunlight for warmth. However, when the UV Index is above 3, protective shade is recommended. You can create "warm shade" during the cooler months by allowing sunlight while

blocking UV radiation. For example, in the house, use treated glass on windows to exclude UVA radiation but let in light and heat. Everyday glass significantly blocks UVB (although better in some countries than in others), and special film or tint sold worldwide by many vendors can block 99 percent of both UVA and UVB.

If you plan where shade is needed around your home, then design effective shade accordingly, a safer and more comfortable home environment will be the reward.

And remember, shade is just one vital part of a comprehensive sun protection program, along with other strategies such as long clothing, wide-brimmed hats, SPF 15+ sunscreen, and UV-blocking sunglasses. (For The Skin Cancer Foundation's 9-point checklist of sun protection guidelines, go to www.SkinCancer.org/Guidelines/.) ■

References available on p.73.

JOHN GREENWOOD, an associate with the Australian Institute of Architects, has over 20 years of experience in design and construction of residential, commercial and aged care projects. For over 15 years he has specialized in shade planning and design. He is coauthor of the Cancer Council of New South Wales' publication *Undercover — Guidelines for Shade Planning and Design*, the most comprehensive shade planning document in Australia. He also developed the shade planning and educational software program *WebShade*. His company, *WebShade Pty Ltd*, offers shade planning consultancy.



WINDOWS NEED TO BE SHADED, TOO

When planning shade structures for their properties, homeowners should be aware that the *inside* of their homes need to be sun-protected as well. Windows, plate glass doors, and skylights allow in a significant amount of the sun's harmful ultraviolet (UV) radiation, and since UV damage is cumulative, the risk of accelerated skin aging and skin cancer adds up over time.

Dr. Warwick Morison, chairman of The Skin Cancer Foundation's Photobiology Committee, notes that to escape UV exposure indoors, you have to be at least six feet away from a south-facing window.

The problem is, while normal glass in the US filters out most of the sun's ultraviolet B radiation, at least 50 percent of UVA rays pass through. Like UVB, UVA increases the risk of skin cancer; it also causes most of the damage that leads to premature skin aging. A 2010 study of indoor workers found that both men and women had significantly more wrinkles and sagging skin on the side of the face more regularly exposed to windows; skin aging was accelerated by five to seven years.

To solve the problem, homeowners can:

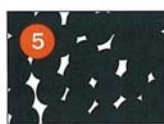
- Place windows away from walls with the greatest direct sun exposure.
- Situate trees, shade sails, and other structures to provide shade for windows and other glass.
- Apply special protective film that blocks more than 99 percent of all UV rays. The films come in varied tints, cutting down glare by more than half while allowing in 30-80 percent of visible light.

Window film will help prevent sunburns and skin cancer, as well as the brief daily UV exposures that accelerate skin aging over time. It can be a lifesaver for people with dangerous sun sensitivity disorders, for whom any UV exposure is dangerous. [See "Extreme Makeover," p.68.]

UV-protective window film is available worldwide. For professional installation, look online or in the yellow pages under "glass tinting" or "glass coatings." Several window film companies now carry The Skin Cancer Foundation's Seal of Recommendation, offering assurance that a sun-protective product is safe and effective. For more information on window sun protection or the **Seal**, visit www.SkinCancer.org.



Adjustable shade roof



SHADE CANOPY DENSITY

Heavy:
over 90% UV
radiation block



Medium:
approximately 60%
UV radiation block



Light:
approximately 30%
UV radiation block