Dr. Jonathan V. Wright's

NUTRITION & HEALING

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Your Complete Guide to the Sun and Your Health

Everything you need to know to get the most from the sun (while staying protected too)

By Jonathan V. Wright, M.D.

The medical mainstream is so full of information and misinformation about the sun, sunscreens, skin cancer, and sun damage, that it can be difficult to sort fact from fiction. That's why this issue of Nutrition & Healing is providing a Complete Guide to the Sun and Your Health. In it, you'll find everything you need to know about how to prevent skin damage and significantly lower your risk of skin cancer, how to get the most from the sun, and how to cure the most common skin cancers if you do develop them.

For more than 30 years, we've been incessantly lectured by "official" and "expert" sources to cover every exposed inch of ourselves with sunscreen before any exposure to sun, lest dire things happen.

Although there is no doubt that sun exposure can contribute to skin cancers—including basal cell and squamous cell carcinoma, melanoma, and the precancerous "actinic keratoses"—there are a few important points that need to be made.

1. You can greatly reduce the risk of skin cancer with an excellent diet, and even more by an excellent diet and specific supplementation.
2. Not getting enough sun exposure, whether because of sunscreen use or because of living in cloud-covered areas of the world, contributes to vitamin D deficiency.
3. Sunscreens themselves can be toxic, and some of them can lead to numerous health issues.

The #1 danger of sunscreens

The use of sunscreens for protection is not new. The ancient Egyptians and Greeks both used botanicals and minerals to prevent damage from the sun. What *is* new is the environmental and physical risk that 20th and 21st century versions of broad-spectrum sunscreens present, along with the very false sense of security that sunscreen use may give.

First, use of sunscreens encourages people to stay outside longer. Increased exposure ultimately leads to more sun damage. Remember, sunscreens can't block everything—and some rays inevitably leak through and cause oxidative damage. But without the feedback of redness on the skin, it is hard to judge when you have received the amount of exposure that your body's antioxidant level can handle.

Secondly, sunblocks can and do lead to vitamin D deficiency. (See www.vitamindcouncil.org for further information and documentation.)

Insufficient vitamin D is no longer something associated mostly with poor diet, education, or low income. One recent study found that about a third of those being screened for annual physicals were deficient in vitamin D3,

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Our mission:

Nutrition & Healing is dedicated to helping you keep yourself and your family healthy by the safest and most effective means possible. Every month, you'll get information about diet, vitamins, minerals, herbs, natural hormones, natural energies, and other substances and techniques to prevent and heal illness, while prolonging your healthy life span.

A graduate of Harvard University and the University of Michigan Medical School (1969), Dr. Jonathan V. Wright has been practicing natural and nutritional medicine at the Tahoma Clinic in Renton, Washington, since 1973. Based on enormous volumes of library and clinical research, along with tens of thousands of clinical consultations, he is exceptionally well-qualified to bring you a unique blending of the most up-to-date information and the best and still most effective natural therapies developed by preceding generations.

Nutrition & Healing cannot improve on these famous words:

"We hold these truths to be self-evident, that all men are created equal, that they are endowed by their creator with certain unalienable rights, that among these are life, liberty, and the pursuit of happiness."

The inalienable right to life must include the right to care for one's own life. The inalienable right to liberty must include the right to choose whatever means we wish to care for ourselves. In addition to publishing the best of information about natural health care, *Nutrition & Healing* urges its readers to remember their inalienable rights to life, liberty, and freedom of choice in health care. This information is published to help in the effort to exercise these inalienable rights, and to warn of ever-present attempts of both government and private organizations to restrict them.

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Sunscreen

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a fact that may suggest widespread deficiency in the United States.[1] The situation is likely even worse than that, since the study's definition of "normal" was well below what physicians skilled and knowledgeable in Natural Medicine consider "optimal," which is based on the blood levels of individuals living in tropical regions (the "tropical optimal").

According to one researcher bold enough to state the facts: "The important take-home message for dermatologists and other clinicians is that health campaigns promoting strict sun protection procedures to prevent skin cancer may induce vitamin D-deficiency."[2]

Would you rub hazardous waste all over your body?

But the dangers of sunscreens extend much further than vitamin D deficiency. In the book, *Sunscreens & Biohazard: Treat as Hazardous Waste*, author Elizabeth Plourde, Ph.D. extensively documents the "other-than-vitamin-D-deficiency" hazards of sunscreens.[3] These hazards affect not only humans, but also other forms of life on Earth.

The problem is that, as with most other chemicals, much too little testing for toxicity appears to have been done before sending sunscreen products to market.[4-5] In addition to concerns about toxicity, there are also concerns about effectiveness. At the rate sunscreens are being used, if they're as effective as we're told, we'd expect to see dramatic decreases in skin cancer rates at the same time we've dramatically increased our use of sunscreens. And while basal cell and squamous cell skin cancers appear to have dropped in the last 20 years, they're still well above their occurrence rate in the 1920s, when sunscreen use first started. And data suggests that melanoma rates have actually increased.[6-7]

The first identifiable use of sunscreens in these United States was in 1928, when para-aminobenzoic acid (PABA) was used in topical products to filter out ultraviolet B (UVB) radiation. But since PABA has been associated with causing topical irritation and allergies, manufacturers altered "plain" PABA into related molecules called "PABA esters" to make products less allergenic. However, since then evidence has been uncovered in studies linking PABA to increased genetic damage when used in sunscreen.[8]

Further research into the potentially damaging effects of the sun found that in addition to UVB rays, ultraviolet A radiation can also cause skin damage and at a greater skin depth.[9] (UVA rays have shorter wavelengths than UVB.) UVA radiation is most associated with signs of "photoaging," such as increased wrinkling and loss of collagen and elastin. Once that discovery was made, manufacturers began to add to sunscreens various chemical ingredients that filter UVA, in addition to the UVB filtering chemicals already in them. There is no one single compound that completely and simultaneously filters potentially harmful UVA and UVB radiation, hence the complexity of compounds used in these products.

Both the FDA and CDC websites offer recommendations for using sunscreens to protect

against both UVA and UVB wavelengths of the sun. These "authorities" recommend that sunscreens should offer sun protective factor (SPF) protection of at least 15 or greater, which gives an indication of how long someone can be in the sun without burning. An SPF of 15, for example, means that you can be in the sun for 15 times the length of time it takes you to burn without sunscreen and protects you from up to 93 percent of UVB radiation.[6] If you use a sunscreen with an SPF of 30, your protection from UVB radiation increases to 97 percent but allows you to be in the sun up to 30 times longer than it takes you to burn without sunscreen. This means, then, that many people feel "safe" being out in the sun much longer than they might otherwise have been without sunscreen.[10-11]

And although they might be somewhat safe from a sunburn, there's absolutely nothing safe about sunscreen.

The SPF tells you how long before you might start to sunburn (which is mostly a UVB problem), but this does little if anything to block UVA radiation. Because of that, as noted above, sunscreen manufacturers now add in additional "broad-spectrum" chemicals designed to limit exposure and damage to the skin from UVA.

Don't be fooled by the "natural" ingredients

Possibly the safest ingredients in sunscreen are mineral complexes in their original forms. Mineral complexes are also known as "physical filters" when used in sunscreens as they work to physically block UVA and some UVB radiation by absorbing it themselves. Titanium dioxide and zinc oxide are two major mineral complexes. In their original forms, mineral complexes such as these are also less likely to cause allergic skin reactions and have virtually no risk of increasing cancer risk.

There's very little downside to the metal complexes in their original forms.

A relatively minor effect is a harmless but still visible white residue left on the skin. Unfortunately, many object to that, so sunscreen manufacturers have switched the focus away from the relatively harmless original forms of titanium dioxide and zinc oxide, and have reduced the size of the metal particles to "nano" size particles between 10 and 50 nanometers. To put 10 to 50 nanometer size into perspective, there are 100,000,000 nanometers in just one centimeter; a centimeter is .390 inches. At that size, trouble starts, even though these nanoparticles are made from entirely natural mineral complexes.

Particles of metals this tiny have never ever been in contact with human skin in the enormous numbers present in sunscreen.

One group of researchers wrote: "The present study indicates that nanosize TiO_2 [titanium dioxide] may pose a health risk to humans after dermal [skin] exposure over a relative long time period."

Researchers at UCLA went further, writing: "It is probably wise to regard NM [nanomaterial] as potentially hazardous waste until proven otherwise."[12]

Studies in cell cultures using colon cells showed that zinc oxide nanoparticles appeared to be twice as toxic to cells of the colon than conventionally prepared zinc oxide. In a 2010 study, human skin cells in culture ("in vitro") were deeply penetrated by TiO_2 nanoparticles, not just into the cytoplasm (the area outside the nucleus of the cell) but all the way into the cells' nucleus.[13]

Los federales—who are busy "protecting" us against walnuts, tart cherries, and raw cow milk (see the March 2012 issue of *Nutrition & Healing*)—have allowed nanoparticles to be used in sunscreens since 1999 without any requirements at all to even disclose them on the label. Unfortunately, sunscreens using nanoparticles are now available worldwide.

Ultimately, sunscreens that contain nanoparticle zinc and titanium are health hazards—and the jury is still out about titanium dioxide, even in "normal" particle sizes, which is widely used in cosmetics. Titanium is not known to be essential to the functioning of human or animal bodies. But zinc is an essential nutrient, and likely safe except in huge overdoses.

The same can't be written at all about unnatural patented or formerly patented chemicals commonly found in sunscreens and approved by *los federales*. (For the technically inclined, these include avobenzone, terephthalylidene dicamphor sulfonic acid, and drometrizole trisiloxane, and other chemicals including benzophenones such as oxybenzone and sulisobenzone.)

The patent chemicals above block UVA, and are added to natural and naturally-derived patentable categories of chemicals including camphors, cinnamates, salicylates, as well as the original PABA and its derivatives.

With such an expansive chemical cocktail, it should come as no surprise that there are some deep downsides when you rub these unnatural, patented, synthetic chemi-

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How vitamin A protects your skin from sun-induced aging

It's no secret that spending too much time in the sun can "do a number" on your skin. This occurs partly because ultraviolet irradiation causes a major loss of retinoic acid receptors in skin cells. (Retinoic acid is a major active form of vitamin A.) When skin cells lose retinoic acid receptors, they also lose the ability to transfer information from their DNA to the cells' "protein factories" (RNA).

This means that the cells can't repair themselves nearly as well, which can ultimately lead to skin damage. Fortunately, with the right preparation, you can enjoy your time in the sun—and get your fill of vitamin D—without having to suffer from skin damage in the process.

You can do that with a topical treatment called retinoic acid.

In a study published in *Nature Medicine*, researchers wrote: "Eight hours after skin was exposed to ultraviolet irradiation, amounts of retinoic acid receptor messenger DNA (for the technically inclined, "messenger DNA" are the molecules that transfer information from the genes to the RNA) were as much as 70-percent lower than control levels. They remained below normal levels for more than 24 hours after exposure."

When these researchers pretreated the skin with rubbed-in retinoic acid 24 hours before ultraviolet light exposure, they discovered that the skin damage was significantly lessened, although not prevented completely.

Based on observed biochemical changes, they wrote that "retinoic acid may stabilize the retinoid receptors by retarding their breakdown." In other words, if retinoic acid receptor breakdown is slowed down, then the loss of the messenger DNA would be less, and *the cells would continue to repair and maintain themselves.*

But wait... Don't many standard references warn us *not* to use retinoic acid if we'll be in the sun, or if we actually get a sunburn? Yes and no.

It's true that there is mouse research suggesting that using retinoic acid *after* you get a sunburn might actually lead to cancer. Even though this isn't proven, many individuals do develop unusual skin sensitivity if exposed to sun immediately after applying retinoic acid.

However, using extra retinoic acid *before* you go out in the sun is a good idea. You just need to make sure you use it *at or near bedtime the night before, to promote skin healing after sun exposure.*

Millions can attest to the safety of this anti-aging wonder

It'll be years before sufficient research will be available to tell us all the "ins and outs" of protecting our skin from sun-induced damage with retinoic acid. For example: Is using it 24 hours prior to sun exposure best, or will using it "the night before" do the job? And how safe is it, anyway?

Fortunately, there's considerable experience concerning retinoic acid safety. For several decades, literally tens of millions of teenagers and others have used it as a major treatment for acne. Dosages used for acne have been 0.1%, 0.05%, and 0.025%, depending on skin sensitivity. (The research noted above used the 0.1% concentration on human skin.) And of course, research in the last decade has found that retinoic acid can reverse some of the changes that occur with aging, and literally millions of women use skin crèmes that contain retinoic acid for this purpose.

While using retinoic acid too much or too frequently can cause redness and burning of the skin, this effect subsides quickly when use is temporarily discontinued. When you start using it again at lower doses or longer intervals, it solves this problem.

Given the years likely to pass before definitive research is done, and given the apparent safety of appropriately-dosed retinoic acid, those who wish to protect themselves against sun-induced aging might wish to use retinoic acid. Until more is known, I'd recommend using it in "non-burning" quantities (these vary according to individual skin pigmentation) before or at bedtime on nights before and after sunshine exposure. (Remember that many women and a few men do this every night, anyway, for "anti-aging" reasons.)

Obtaining retinoic acid. Retinoic acid (one trade name is "Retin-A") is available inexpensively (approximately $7 per 1½ ounce tube outside of tourist areas) without prescription nearly everywhere...*in Mexico.*

In these "free" United States, the same quantity of Retin-A is available only on prescription at approximately $35 for the same quantity. Then there's the doctor's fee for the prescription.

So maybe you can at least afford to use retinoic acid on your face...or (here we go again) con-

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cals into your skin. Here's just a few of the more serious ones...

• Sunscreen plus sunshine causes greater skin damage than sunshine alone!

Another significant study showed that the longer certain sunscreen compounds remained on the skin, the greater the production of reactive oxygen species (ROS). (These included octocrylene, octylmethoxycinnamate, and benzophenone-3.) Reactive oxygen species are damaging and even sometimes lethal to many components of living cells.

When these sunscreen compounds penetrated the skin, they raised the ROS above that which would have occurred with sun illumination alone on bare skin. For sunscreen devotees, that needs repeating: ***Sunscreen use plus sun exposure causes greater oxidative damage to skin than sun alone!***

During the study, researchers measured the levels of ROS in both treated and untreated skin. While there was a protective effect observed during the first 20 minutes following the application of the sunscreen, the number of reactive oxygen species increased significantly after just one hour in the treated skin.[14]

• Sunscreen wreaks havoc on your hormones

If oxidative damage and accelerated skin aging associated with sunscreens weren't bad enough, here's another one for you: Many sunscreen chemicals—particularly the benzophenones—have also been associated with disruption of endocrine (hormone) signals. Studies in fish have found that these ingredients are estrogenic and affect minnows when they are exposed to them for as little as 14 days. Questions about the impact on human reproductive cycles, sperm production, and fertility have been raised based upon the results of these studies.[15-16]

If you're a man using sunscreens, you might want to know that some of them—specifically benzophenone "BP1" and the camphors 3-BC and 4-MBC—inhibit your body's production of testosterone by inhibiting the enzyme that converts its precursor androstenedione into testosterone. Even worse, the testosterone that does escape this inhibition is then blocked from activating its receptor by the same chemicals!

• Sunscreen causes cancer cells to spread

If you're a woman using sunscreens, you'd best hope you don't have any beginnings of breast cancer. Researchers have found that eight of nine widely used sunscreen chemicals tested significantly increased the division of breast cancer cells.[17] (These chemicals included benzophenones BP1, BP2, and BP3, salicylate homosalate HMS, camphors 3-BC and 4-MBC, cinnamate OMC, the PABA derivative OO-PABA, but not avobenzanone.) Another study showed that this effect was even stronger than the effect of the most potent human estrogen, estradiol![18]

• Sunscreen disrupts thyroid hormone production

Let's see...messed up testosterone for men, abnormal estrogen signaling for women...why not disrupted thyroid function for both sexes? That's been found too. Yet another benzophenone—this time BP2—inhibits the thyroid enzyme thyroid peroxidase (TPO), which is necessary for the formation of the most active thyroid hormone, tri-iodothyronine (T_3) and its precursor, the mostly storage-and-transportation form, thyroxine (T_4).

Accelerated skin aging (photoaging), infertility, the combination of low and blocked testosterone, increased division in breast cancer cells, and disrupted thyroid hormone production should be enough to keep you away from the stuff.

What alternatives are there to sunscreens?

Now that you are rethinking your commitment (if you had one) to using sunscreens, that doesn't mean you can stay out in the sun for hours without the proper protection—and without suffering the consequences of skin damage. Fortunately, there are many alternatives to sunscreens that are extremely safe and effective.

One method used for thousands of years, if not longer, still works well. The results of the NHANES study found that shade and protective clothing reduced sunburn more effectively than sunscreens.[19]

In addition to that, there are numerous ways to get the most from the sun—while also staying protected from it. Take a look:

1. You can protect your skin from sun damage with a safe and effective topical treatment. Read more about it on page 4.
2. If you do develop skin cancer, there is a natural, non-surgical cure. Read all the details on page 5.
3. Just because you're spending time outside doesn't mean you're getting enough vitamin D. Read about the "EZ" guide to optimal vitamin D intake on page 8. JVW

Your "EZ" guide to optimal vitamin D intake

When you go outside into the sun on a cloudless day, will your skin start the process of synthesizing vitamin D? If you live at the Earth's equator, the answer is nearly always yes.

But that bright sunlight you see may or may not contain those crucial vitamin D wavelengths. The farther you are from the Equator, the more the Earth tilts away from the sun six months a year, putting more atmosphere above to screen out the vitamin D wavelengths.

In Los Angeles on January 1, for example, vitamin D rays reach your skin for only six daylight hours (approximately 9:00a.m. to 3:00p.m.). Even at the Equator, researchers have determined that clouds, aerosols, and thick ozone events reduce the duration of vitamin D synthesis considerably, and can suppress vitamin D synthesis completely.[1]

So even though it's true that you could just take extra vitamin D, remember how I'm always telling you to "Copy Nature"?

The sun has more wavelengths than just the ones that deliver vitamin D. Just as you know it's best for your health to take alpha-tocopherol with beta, delta, and gamma-tocopherols, it's best to take calcium with magnesium, and it's best to take the entire B-complex of vitamins together... it's very likely best to take all the sun's wavelengths on your skin together whenever you can in order to achieve maximum health benefits.

So while we know that infrared waves can have health benefits, it's very likely that all those frequencies "in between" have health benefits too that just haven't been "officially" discovered yet.

Since you don't live at the Equator, how do you know when those vitamin D wavelengths—along with other health-benefiting wavelengths—are reaching the ground in your area?

As with many other questions to be researched in the 21st century, go online! All I had to do was go to the VitD-ez webite, enter the date, location, and other details, and (after adjusting for the eight-hour difference between Seattle and London time (Greenwich mean time), I found out that those vitamin D rays would be available today (Monday, February 5) from 10:00a.m. to 3:00p.m. Seattle time.

Visit http://tiny.cc/VitD-ez to find out the optimal vitamin D time for your area. JVW

Protect your skin

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tact your members of Congress about health care freedom!

Cheaper, easier, more readily available

Since retinoic acid (Retin-A®) is available only on prescription (except to the freer citizens of Mexico), you can likely get the same results by just swallowing vitamin A in capsules (or for better absorption, as a "micellized" liquid).

In an uncontrolled trial in humans, researchers found that taking 50,000 IU of vitamin A daily starting two days to two weeks before sunshine exposure helped significantly increase the time in the sun before skin became pink.

(Warning: *Do not take this amount of vitamin A if you have any chance at all of becoming pregnant!* If a chance of pregnancy exists, go to your doctor and then your pharmacist for a topical Retin-A prescription—or better yet, take a trip to Mexico.) JVW

ALTERNATIVE HEALTH RESOURCES

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