

Prepare for the sun

How to make the most of sunshine; getting a healthy tan while avoiding sunburn.

You probably know that I have been an advocate of sunlight for some years, and that scientists in general are slowly coming round to this viewpoint. See also [Can Sunlight prevent Cancer?](#) on our website [naltd.co.uk](#). Here are my guidelines for safe and successful suntanning and vitamin D boosting – just in time, I hope.

In Advance

The first key to success is to **PLAN AHEAD**, for two main reasons;

- **Nutritional protection** needs to be started *at least a month before* you start sunning.
- **Sunlight information** needs to be obtained in advance, so that you can work out your starting exposure time *before* you start sunning.

Food

Diet can provide most, perhaps all, of the nutrients you need, but you need to be careful, as these days diet can also contain large amounts of toxins such as pesticides. So the first rule is to eat **organic food** as much as possible. Change your diet **NOW**, and your bodily toxin load will gradually improve.

It has been known for a long time that pesticides can cause, or at least increase the risk of, cancer – certainly all the big cancers like those of lung, colon and breast. But the evidence is now increasing that they may also increase the risk of melanoma, by at least twice according to several studies. In fact in 2000, dermatologists started talking about the possibility that pesticides might be THE cause of the rise in melanoma rates in recent decades.

So what should we be doing? Eating pure (i.e. organic) food, for a start, drinking pure water (see below), and generally cleaning our lives up are all good. Then also improving our nutritional status, because the same nutrients that are listed above as protective against UV damage will also help to protect against chemical damage from pesticides, pollution and so on. But one factor that is proving to be protective against more and more cancers (breast, bowel, lung, prostate, in fact all the big ones, plus melanoma) and other diseases, is vitamin D! Start improving your nutrition, so that you can sunbathe and so improve your nutrition even more!

Pure water

Don't believe everything that the water utilities tell you. They frequently say that their tapwater is as pure as it is possible to get. This is deceptive, the truth is that the water from your tap is probably loaded with chemicals which not only alter the taste, but may even be harmful for your health. In fact, most of this toxicity originates from the chlorine which is added to sterilise the water. This chlorine then interacts with chemicals that occur naturally in the water to form toxic substances. Of course in many places chemicals from industrial pollution or from agricultural 'run-off' get added to the mix to make something even more toxic.

But you need a daily intake of good, clean water to help your body get rid of all the toxins, the by-products of digestion, the breakdown products of recycling and repair in your cells. And if you are going to be in the sun, it's going to be hotter than usual, you will lose water through perspiration and through breathing, and you need to replace this as well. So to improve your toxin-status generally, and to prepare for the sun, it is advisable to clean up your water sources.

The good news is that proper water filters, based on activated charcoal, are reasonably good at removing most of the pollutants in water, including the chlorine compounds. So it is worthwhile having a filter installed at home – a plumbed-in one is best, but jug filters can still be useful, provided you follow the instructions. Use the water for all cooking purposes, as well as for making tea, coffee, herbal tisanes etc.

The purest water you can get, though, is a good mineral water. Whereas the best you can do with tapwater is to clean it up again, mineral waters should have been in the ground for so long that they are effectively pre-industrial, and in any case they have been filtered through several hundred metres of solid rock – the biggest and best filter in the world. They may also have the advantage of extra minerals, such as calcium and magnesium. By all means select your mineral water with mineral supplementation in mind, but its main value is its purity and lack of toxins, so that you can use it to wash your inside every day, as you do your outside.

Opinions vary on how much you should drink, and to be honest, nobody knows for certain – and my advice is not to trust anybody who claims to have all the answers. Alternative practitioners can sometimes be just as patronising as ordinary doctors. From experience, I would suggest that you aim to drink at least 1 litre of pure water daily – all the

time, not just when you are sunbathing. In fact when you are sunbathing, you may well want to increase the amount; just try to listen to your body, and do what it tells you.

Fish oil

The most dramatic dietary effect in protecting skin from UV damage is seen with **omega-3 fatty acids** - the oil that we get best from oily fish. (A dietary supplement of fish oil taken every day for 3 months increased the amount of UV needed to start burning the skin (the MED, Minimal Erythema Dose) by 70%.) This makes sense if you think about it; sunlight levels are usually highest at the seaside, and if nature did not give us a natural protection, you would expect that fishermen, for instance, would develop skin cancer far more frequently than city-dwelling office workers. The fact that this has never been reported may be due to the diet that fishermen eat – rich in fish.

Antioxidants

We all know that we are subject to attack from free radicals, from pollution (of food, air and water) and from radiation, and that sunburn damage is one form of this radiation. We also know that the antioxidant vitamins and minerals all help to protect our skin, and the rest of our bodies, from possible UV damage. Taking a supplement of **vitamins E and C**, for instance, can probably increase your MED (Minimal Erythema Dose, the amount of UV that will just start to burn your skin) by up to 40%. But your body has a complex system for protection against toxins, and each stage in this system uses its own set of nutrients. So taking too much of one nutrient and not enough of another can cause a build-up of toxins at some point in the system. You need them all, in other words. The table below shows how much you should be getting, either from food or from supplements; it doesn't matter which, and it is always safer to overdo it than to risk deficiency. If you take too much of such nutrients, the worst you are likely to do is to give yourself expensive urine, as the excess is excreted unused. The two exceptions to this rule are:

Vitamin A; pregnant women or those who are liable to become pregnant may (it's not certain, but this is not the place for that discussion) increase their risk of having a baby with abnormalities if they take over 10,000 IU of vitamin A per day. But beta-carotene, or pre-vitamin A, is completely safe, and this is the form provided in most vitamin supplements, so if you *might* become pregnant take that instead. And don't eat liver as well, as that provides about 10,000 IU of vitamin A in every ounce.

Very excessive levels of any nutrient – many times the officially recommended level – may become toxic, but this usually requires taking a lot of a single nutrient for a long time, so just be sensible, and follow the instructions on the bottles, or those from your doctor or nutritionist. If in doubt, check the **Maximum safe dose** below

Pre-sun supplement summary

Note: W-3 oil (Omega-3); ideally a roughly equal mixture, 100mg = 50mg EPA + 50mg DHA

Nutrient	Minimum effective dose	Maximum safe dose	Recommended sunlight dose
w-3 oil	600 mg	1800 mg	900 mg
Vitamin E	100 IU	800 IU	400 IU
Vitamin C	500 mg	10,000 mg	4,000 mg
Beta-carotene	2000 IU	20,000 IU	10,000 IU
Zinc	12 mg	60 mg	30 mg
Selenium	200 mcg	1000 mcg	500 mcg
Magnesium	100 mg	800 mg	400 mg

Calculating Safe Sunlight Exposure

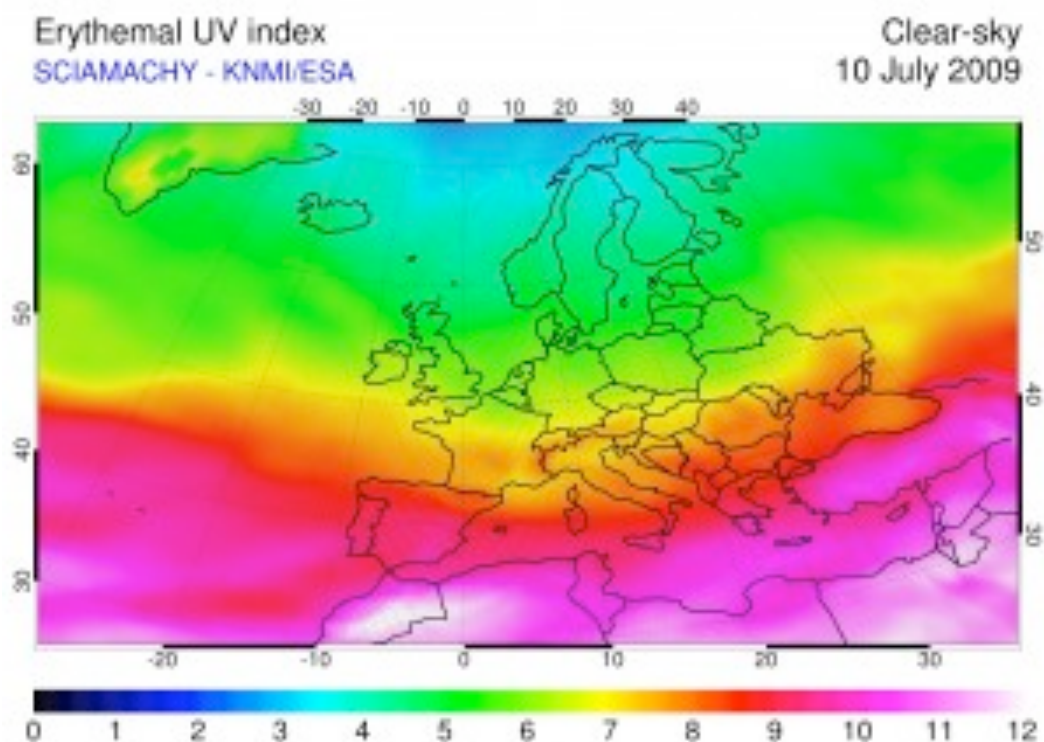
In order to get the best from the sun you need to do a little research in advance. There are three things you need to work out:

- How much UV you will be exposed to – the UV Index
- How much UV your skin needs and will accept – the MED, your skin type
- When and for how long to go out in the sun - based on solar noon

UV Index

This is now a convention that is accepted pretty much worldwide. It describes the amount of UV that will be reaching the earth's surface at solar noon.

There is a very good UV Index map at the SCIAMACHY website, like this one but bigger. The important thing to remember about this chart is that it describes the amount of sunlight and UV at solar noon; for safety's sake you should assume that the level will be the same for about an hour either side of that, but after that it will fall rapidly away, so exposure times can be increased accordingly. So the third step will be to calculate solar noon.



MED – Minimum Erythema Dose

This chart explains the UV Index in terms of the approximate level of UV, and of how long it will take a Type I-skinned person to start to burn. This is your starting point for calculating your safe sunbathing time.

UV Index	UV level	MED (Type I skin)
0	None	–
1	Minimal	60+
2	Minimal	60
3	Low	45
4	Low	40
5	Moderate	30
6	Moderate	25
7	High	20
8	High	15
9	High	12
10	Very high	10
11	Very high	<10
12	Very high	<10

Skin Type

Next establish your skin type from this table;

Skin type	Ethnic group	Appearance	Sensitivity to sun	Exposure factor
I	Celtic	White skin, freckles, blue eyes, red or blond hair	Burn very easily; do not tan	1
II	Nordic	Pale skin, ± freckles, blue or hazel eyes, red or blond hair	Burn easily; tan slowly and slightly	1.5
III	Most 'white' people	Fair skin, blond or brunette	Brown moderately; tan slowly and moderately	2
IV	Mediterranean, Chinese / Japanese, Amerindian	Olive or light brown skin, dark hair, dark eyes	Burn slightly; tan easily	2.5
V	Arab, Malaysian, Mexican, Indian	Brown skin, hair and eyes brown or black	Burn rarely; tan well and deeply	3.5
VI	Negro, Aborigine, Melanesian	Skin brown to black, hair and eyes black	Never burn; remain dark-skinned	7

Example

- You are in Spain where the UV Index is given as 8.
- For a Type I skin this allows 15 minutes in the sun.
- You have Type III skin so multiply x2 to give 30 minutes.
- This is your maximum time in the sun; it will typically take about 2/3 of this to start to tan you.
- The nutritional recommendation should extend your burning time without making any difference to your tanning time.

Solar Noon

Next you need to find out the time of true solar noon at the place you will be sunbathing. This is when the sun is at its highest, and its rays at their most powerful, especially the UV; it is also the time that the UV Index is worked out for. It is unlikely to be at exactly midday, because the main European time zone, for instance, stretches from the heel of Italy to the northwest of Spain, a distance East-to-West of over 2,000kms, and it takes the sun more than 100 minutes to traverse that distance (or to be correct, it takes the earth 100 minutes to rotate that far). So if it is officially midday, and the sun has just passed its highest point in Napoli, it's still an hour or so away from it in Madrid.

One way to find true solar noon is to find out the sunrise and sunset times for your location, and solar noon will be midway between them. If you have a compass, though, all you need to do is observe when the sun is due South of you, and that is solar noon. I have an App on my iPhone that does this based on my location (there are several, and no doubt for other smartphones too).

Example

I will be in Barcelona for a wedding very soon.

Because it is only 2 degrees east of London despite clocks being an hour ahead, solar noon is at 13.56 local time (12.56 London time) while it's at 13.05 in London.

So I will need to follow these guidelines – max 30 minutes in direct sunlight – between about 12.30 and 15.30.

Cloud and shade

Because UV is scattered by the atmosphere more than visible light, UV exposure under shade is not abolished, it is reduced to about 60%. You can extend your exposure accordingly.

The published UV Index should take account of clouds and weather forecasts, so no adjustment needed.

Altitude

You need extra care and extra protection at altitude. All the above is worked out for sea level; a rise of 1,000 metres raises the UV Index by 1 - 1.5. Adjust accordingly. This is why skiers need to use sun protection on noses and lips.

Faces

It's true, the worst sun damage is seen on the face. Yet it's less than 10% of skin surface, so a negligible proportion of the skin exposure that you need to get the vitamin D and (probably) other benefits of sunlight. Factor it out – wear a hat! And a decent-quality sunscreen if you must.

The final rule

Sunlight is a sensual pleasure, like food – very like it in fact. As well as being essential it is pleasurable. Enjoy!