


UV PROTECTION AT WORK

Physioderm®

OCCUPATIONAL UV PROTECTION: ESSENTIAL IN THE OPEN AIR

In Germany, approximately 2,5 - 3 million people work outdoors regulary and predominantly. For that reason, they run a strikingly increased risk of contracting skin cancer. Natural sunlight contains UV radiation that may cause severe skin damages in the long run. Whoever works in the open air, is regularly exposed to this radiation for many years. In order to prevent permanent damages to health, special protection is required. In the worst case, dermatitis may occur.

White Skin Cancer As Occupational Disease

Nowadays, the harmful implications of UV radiation are indisputable. Since 2015, white skin cancer is officially accepted as occupational disease in Germany and has become one of the most reported occupational diseases right after its approval. This has led to a change in dealing with the topic ”sunlight as risk factor“. Now, the awareness with regard to the importance of professional UV protection is much higher among employers and employees than it was a few years ago.

Sunlight – Still An Underestimated Threat

Although more and more attention is given to UV protection in the affected industries and occupations, the risk is still underestimated today. The measures taken in companies are not always suitable to protect employees effectively. An equal problem is the fact that employees often are not sufficiently informed about the importance of sun protection and how they can effectively protect themselves against damages to health from UV radiation.

UV Protection Is Part Of The Personal Protective Equipment (PPE)

Occupational sun protection is not a private matter of the employees. On the contrary: Adequate protection against UV radiation for occupationally exposed persons is part of the personal protective equipment (PPE) – not just since the so-called ”white skin cancer“ is an accepted occupational disease. Therefore, employers are required by law to provide appropriate protection for every endangered employee.

UV RADIATION: IMMINENT RISK AT WORK

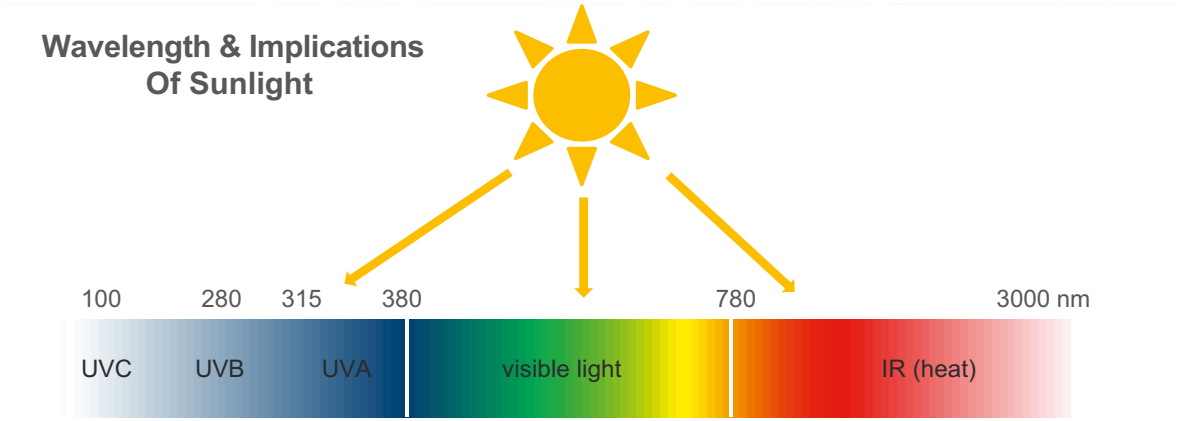
Every employee who works outdoors regularly, is highly endangered by sunlight. The immediately noticeable damages to health – primarily sunburn and sunstroke – are unpleasant, but far less serious than the imminent long-term effects of premature skin ageing and skin cancer. The eyes also suffer from UV radiation: In addition to corneal and conjunctival inflammation, the damage suffered may cause cataract in the long term.

What is UV radiation?

Ultraviolet radiation – shortly called UV radiation – is an electromagnetic radiation invisible to humans, which is contained in natural sunlight. Their wavelengths from 200 to 400 nm are shorter than those of visible light. The relatively long-wave UVA rays penetrate deeper into the skin and are primarily responsible for premature skin ageing. On the other hand, the short-wave, energy-rich UVB rays are the reason for sunburn. All types of UV radiation in this wavelength range contribute to the appearance of skin cancer. Since the effects of UVA radiation are not directly perceived, as sunburn caused by UVB radiation, their risk is very often underestimated. In addition, UVA radiation are also able to penetrate clouds and even normal window glass.

Artificial UV Radiation

The extremely short-wave UVC radiation in sunlight is filtered out by the atmosphere and does not reach the earth‘s surface. However, for certain occupational groups, such as welders, artificial UVC rays are a risk at work.



UVA rays (320–400 nm)

- penetrate very deeply into the skin
- cause skin cancer, premature skin ageing and cataract
- no long-term tanning, no build-up of skin's self-protection

UVB rays (290–320 nm)

- cause sunburn, skin cancer as well as corneal and conjunctival inflammation
- required for the formation of vitamin D

UVC rays (200–290 nm)

- only artifical occurence is relevant
- develop e.g. during welding, laser and electron beam work
- cause sunburn and skin cancer

Particularly Vulnerable Occupational Groups

- bricklayers
- carpenters
- concrete workers
- duct builders
- dustmen and dustwomen
- facade builders
- farmers and foresters
- fruit and vegetable growers
- horticulturists and landscape gardeners
- mountain guides and ski instructors
- nursey school teachers
- PE teachers
- postmen and postwomen
- road builders
- roofers
- sailors
- steelwork constructors
- stone chrushers
- welders

SEVERELY INCREASED RISK OF SKIN CANCER FOR OUTDOOR WORKERS

About 200,000 people suffer from a malignant skin change in Germany every year; almost 4 million people are affected worldwide. Thus, skin cancer is not only the most common form of cancer, but one of the most common diseases at all. UV radiation is considered the main reason for malignant tumors of the skin.

Cumulative Damages Caused By Long-Term Sun Exposure

In particular, older people suffer from skin cancer, as their skin is severely affected by cumulative damage resulting from decades of exposure. Outdoor workers are particularly vulnerable. Those who regularly work in the open air for years have a twice as high risk of contracting certain forms of skin cancer than indoor workers. A 40 % higher UV exposure is already sufficient to increase the risk of a disease accordingly.

Solely Conditioned By UV Radiation: White Skin Cancer

The most common form of skin cancer is white or light skin cancer. The summary name includes basal-cell carcinomas (BCC) as well as the more aggressive cutaneous squamous-cell carcinomas (cSCC). Both types of carcinoma originate exclusively from exposure to UV light and usually occur on the so-called sun terraces of the body, which are particularly exposed to radiation – such as nose, ears, lips, neck and hands. In its early form as actinic keratosis, the disease often appears in the shape of rough, reddish skin spots or thickening of the stratum corneum – the skin's horny layer.

Extremely Aggressive: Black Skin Cancer

Malignant melanoma, also known as black skin cancer, occurs far less frequently than white skin cancer, but is much more malicious. A high UV exposure is considered to be the most important trigger for this skin change as well. Unlike white skin cancer, which is conditioned by UV radiation solely, genetic predisposition also plays a role in black skin cancer. Repeated sunburn during childhood are also said to favour the emergence of this disease.

White Skin Cancer May Result From Occupational Exposure

Employers are required by law to take all appropriate measures to protect their employees from occupational diseases. Since 2015, cutaneous squamous-cell carcinomas and multiple actinic keratosis are recognized as occupational diseases in Germany. It shall be deemed to be proven that certain forms of light-induced white skin cancer and its precursors are the direct and exclusive consequence of occupational exposure.

Active Against Cancer: Prevention And Early Detection

Prevention is the best medicine in the fight against skin cancer. In addition to prevention, timely recognition is also of great importance, because early-recognized skin cancer is usually highly treatable. People who protect themselves well against UV radiation should also look for eye-catching skin changes that may be an early sign of skin cancer. Non-healing redness or rough spots, skin nodules, inexplicable crusts or bleeding, changing moles: All these symptoms are an occasion to visit a dermatologist as a precautional measure. Furthermore, regular skin screenings are generally advisable. In Germany, statutory health insurance companies take over these costs every two years for people older than 34 years.

RISK ASSESSMENT: RATE UV EXPOSURE

Unlike infrared radiation which is also contained in sunlight and which is felt as heat, UV radiation is not perceptible to humans. Therefore, subjective perception is hardly helpful in estimating the health risk of UV radiation – the actual danger is often underestimated because the sky is cloudy or a cool wind blows. However, the UV index, which indicates the expected daily peak at noon, provides significant help for assessing the prevailing UV exposure.

Decisive For UV Exposure: Position And Height Of The Sun

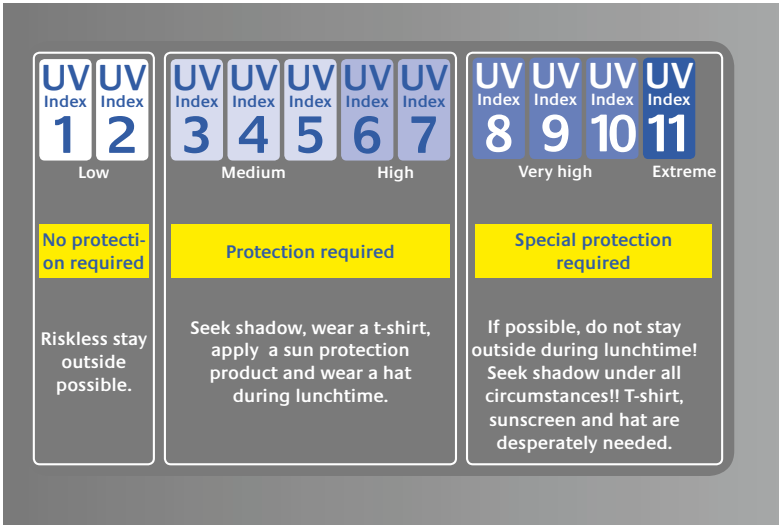
Season and daytime play an essential role in the exposure caused by UV rays. The intensity of the solar radiation depends on the angle in which it falls on the earth: The higher the solar altitude and the steeper the angle of incidence, the more intense the radiation. Therefore, the UV exposure in summer is far higher than in winter and reaches its peak at noon. About half of the daily total dose of UV rays hits the earth between 11:00 AM and 01:00 PM. The height above sea level also has significant influence as the radiation intensity increases by about ten percent per 1,000 meters.

Risk Factor Reflection

Moreover, stray light reflected by the surrounding contributes significantly to the intensity of the UV radiation. Reflective environment, such as snow, water and light sand, can greatly increase UV exposure as light sand reflects up to 80 % of the radiation, and snow even up to 100 %. Even clouds, which reduce direct UV radiation, can increase the actual UV exposure by reflection for a short time beyond the measure that would prevail in a cloudless sky.

UV Index: Planning Aid For Effective Occupational Safety

The UV index is a prediction of daily sun and UV exposure. It captures the maximum exposure which is expected at a given location because of damaging UV rays, and is, therefore, a good indication for an accurate risk assessment and the appropriate adaptation of occupational safety measures. The worldwide uniform index is often indicated in weather forecasts and can be accessed on the internet.



How Much Sunlight Does The Skin Tolerate?

Not every human being is equally sensitive to UVB rays. Depending on the skin type, the self-protection time – i.e. the maximum length of time for which untanned skin can be exposed to sunlight one day long without skin reddening – can be between five and forty minutes. Therefore, outdoor workers who work in whole or in part under the open sky must protect themselves from UV radiation in any case. The self-protection time of the skin is always too short to withstand the professionally-induced, increased UV exposure.

	Skin Type I	Skin Type II	Skin Type III	Skin Type IV
Characteristics	very light skin, light blonde or red hair	light skin, blonde hair	light brown skin, dark blonde hair	brown skin, black hair
Skin Reaction	always red, never tanned	often red, slight tanning	moderately tanned, redness uncommon	tanned quickly, never red
Self-Protection Time	5 to 10 minutes	10 to 20 minutes	20 to 30 minutes	40 minutes

The higher the UV index, the faster damages to health can occur in the case of unprotected skin. In Germany, the index is usually not more than 8. However, on the high grounds of the Alps, values of 9 and 10 are also possible in summer.

PREVENTION THROUGH HOLISTIC UV PROTECTION MEASURES

Sunlight is the most common carcinogenic influence in the workplace. Therefore, UV protection should be the top priority for companies with outdoor workers. In order to protect employees from UV radiation, a holistic protection concept is required, which takes the respective work situation as well as the risk situation into account. This is the only way to ensure the health of the employees in the long term.

Substitution Or Technical Measures

In some circumstances, it may be possible to completely circumvent the risk caused by UV radiation by relocating the work place. If such substitution is not possible, technical aids such as sunshades and awnings, housings, canopies or closed vehicle cabins may reduce the UV exposure.

Organisational Measures

The resonable organisation of work can help to protect workers from UV radiation. To avoid the high UV exposure between 11:00 AM and 01:00 PM, for example, work and break times can be postponed. If possible, outdoor work should be planned in such a way that it can be carried out in the shadow – e.g. on the building side turned away from the sun. Last but not least, the UV exposure of the individual employees decreases when certain work is shared among several employees.

Personal Protection Measures

Headgear with ear and neck protection, UV goggles, body-covering clothing as well as professional UV protection products are among the personal protective measures. As an essential supplement, personal measures minimise the UV exposure, which cannot be completely circumvented by technical and organisational measures. However, they are not suitable as sole protection and can only be effective in the context of a well-conceived overall concept.

← Watch our UV Protection Video via QR Code or on

www.pgp-hautschutz.de/en/expertise-center/videos/

Well-Informed Employees

Actively contributing employees are an essential condition for the effectiveness of UV protection measures. Effective protection is only possible if each employee is aware of the health risk, specifically minimises his or her personal UV exposure and consistently uses the measures provided. In particular, this applies to personal protective measures, since their effect depends decisively on the correct application. Therefore, the training of employees is also essential in order to ensure successful UV protection and a long and healthy working life of the employees.

FOCUS ON OCCUPATIONAL UV PROTECTION PRODUCTS

Light protection products are essential for effective UV protection at work. As an integral part of a comprehensive UV protection concept, they provide protection for skin areas that cannot be adequately protected by clothing – mostly face, neck and hands. By reducing the penetration of UV radiation into the skin, UV protection products can reduce the risk of skin cancer by 40 %. A precondition for effective protection is the utilisation of suitable products, which are specially designed for professional use. Equally important is the consistent and correct application.

PGP: Competent Partner For Professional UV Protection

The right product choice is just as important for effective UV protection at work as consistent and correct application. Peter Greven Physioderm (PGP) helps you to create an individual skin care plan that takes into account the specific circumstances and protection needs of your company. Through on-site training and consultations, PGP raises your employees' awareness for the topic and imparts the application and effect of UV protection products for outdoor workers.

Application As Critical Protection Factor

A critical factor with regard to the effectiveness of UV protection products is their application. They must be applied generously and renewed regularly – only then they can develop their protective effect.

The sun protection factor (SPF) indicates the value by which the product extends the self-protection time of the skin: Thus, a product with SPF 30 allows employees to expose themselves 30 times longer to the sun without suffering damage. However, the protection factor is only applicable if at least 2 milligrams of protective product are used per square centimetre of skin. In practice, employees often apply much less, which may reduce the effect or prevent it at all.

In addition, sunscreens lose their effect over time due to friction, perspiration and other influences and have to be reapplied every two hours. However, the renewed application does not extend the period of protection, but rather re-establishes the old protection status which has diminished in the meantime.

Recommended Product Amount For Each Part Of The Body

Tube

The required amount of cream for each part of the body exactly fits on the length of forefinger and middle finger.

Dispensing System

Required amount of cream for each part of the body: push button 3 x.

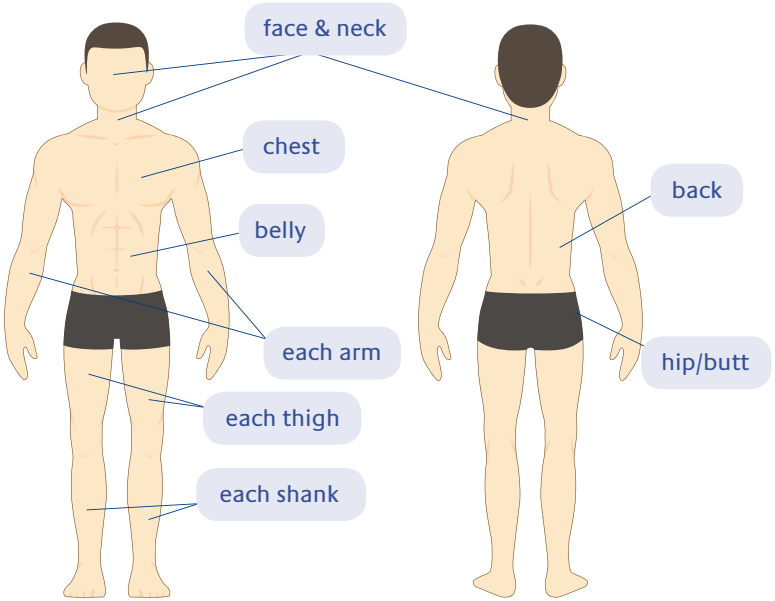
Spray

Required amount of product for each part of the body: push spray head 10 x.

At A Glance: Correct Use Of UV Protection Products

- Apply generously: 2 mg/cm² (approximately one tea spoon for face, neck and ears)
- Rule of thumb: per part of the body, use an amount that covers two fingers generously
- Reapply regularly: every two hours at least

Parts of the Body



PROFESSIONAL UV PROTECTION WITH PGP

Skin care expert Peter Greven Physioderm (PGP) offers everything employers need for effective UV protection at work. With the help of comprehensive services and professional products, PGP assists companies in providing optimal protection to every affected employee. Risk assessment and accurate protection concepts are also part of PGP's range of services, as well as information material and training, which impart the correct application of UV protection products to employees on-site. Last but not least, PGP offers high-quality UV protection products that are precisely tailored to the requirements of the professional sector.

Professional Products For Occupational Protection

UV protection products used at work must meet particularly high requirements. High-quality professional products do not only prevent sunburn, but also offer reliable protection against UVA and UVB radiation and even - when required - against harmful UVC rays.

Their sun protection factor (SPF) is extremely high. Furthermore, they are fragrance-free and ideally very water-resistant. In this way they even resist strong perspiration and reduce the risk of an allergic reaction even in case of long-term use.

At A Glance: Properties Of A Good Occupational UV Protection Product

- Adequate protection against UVA and UVB rays. Additionally against UVC rays when dealing with artificial UV sources
- High SPF: At least 30, in the optimal case 50+
- High protection in all relevant wavelength ranges (UVA protection is at least 1/3 of UVB protection)
- Water-resistant or rather very water-resistant
- Elimination of potentially allergenic ingredients such as perfume

PRODUCTS FOR OCCUPATIONAL UV PROTECTION

PHYSIO **UV 30 SUN**

The professional skin protection cream PHYSIO UV 30 SUN offers effective protection against natural and artificial UV radiation. It is distinguished by its versatility and is suitable for outdoor work as well as for arc welding.

PHYSIO **UV 50 PLUS**

The very water-resistant and highly-effective UV protection cream PHYSIO UV 50 PLUS is specially designed for work under extreme conditions. These include outdoor work in heat and wetness as well as welding and handling photosensitizers.

PHYSIO **UV 50 SPRAY**

The transparent PHYSIO UV 50 SPRAY enables rapid and effective UV protection when working outdoors. The pump spray is particularly easy to handle and can be applied upside down and to hairy skin parts without any problems.

LIPSTICK **FROST & SUN**

LIPSTICK FROST & SUN with SPF 30 protects the particularly endangered skin of the lips from natural UV radiation. Due to its special formulation it lasts particularly long and is harmless in case of oral intake.

08/2018

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