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SUN AND HEALTH

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It is a great pleasure and honour for me to talk to you today, at this year's IVSS-Colloquium, on the topic of "Sun and Health".

I am going to address the following issues:

1. **UV-Study "Ultraviolet Radiation in Agriculture"**

This study was conducted in the years 2004 to 2006 and comprised the medical examination of skin and eyes with regard to radiation-induced alterations of skin and eyes, plus a field test including the measurement of UV exposure during agricultural work.

2. **"Sun and Health" Campaign**

This prevention programme, initiated by SVB, has been going on since 2007 and will run until 2010.

Before going into detail, I would like to tell you that the last thing I have got in mind with my speech is to spoil your enjoyment of the sun. Sunshine brings joy and wellbeing. Sunrays are indispensable for the photosynthesis of plants and consequently the production of oxygen on our planet. And, the human organism needs the sun to produce, for instance, vitamin D and hormones.

Yet: **The sun is glaring ... and burning!** If skin and eyes are exposed to the sun, unprotectedly, for years, the UV radiation of the sun will also cause premature skin ageing, skin cancer and cataract.

The skin does not forget any sunburn.

Five sunburns during childhood double your risk of developing skin cancer as an adult!

Over the last decades, a worldwide surge has been observed in new skin cancer patients, in particular melanoma patients, among the white-skinned population. Every year, UV radiation is becoming more intensive. Over the last ten years, the annual UV dose has increased by 3 to 4 per cent. Over Central Europe, too, miniature ozone holes have been detected in the stratosphere. And, the trend in society, with people still often associating tanned skin with a healthy look, vitality and sportiness, is also playing a significant role in this development. Our ancestors seem to have protected themselves better than the people of the 21st century. This painting by Egger-Lienz shows a mountain farmer of 1907 mowing the grass. The farmer's attire protects him quite well against UV radiation.

Let's now turn to the medical examinations of skin and eyes. The director of the study was Univ.Prof. Dr. Harald Maier from the Vienna University Clinic of Dermatology, and the eye exams were conducted by Dr. Kellner from the Department of Ophthalmology of the Viennese Rudolfstiftung Hospital. A total of 448 female and male farmers from various types

of agricultural enterprises were examined and the results compared with those of examinations of 108 office clerks.

The **types of agricultural enterprises** included in the study were:

- mixed farms without handicap
- mixed farms with handicap
- arable farms
- fruit/wine-growing farms
- control group (office employees)

Given the limited time we have today, I will just briefly summarize the most important results of the medical study:

Fortunately, **no** difference to the control group could be established with regard to UV-induced skin cancer prevalence. Yet, the lip carcinoma risk was found to be 1.6 to 3.2 times higher.

Skin ageing was found to be more pronounced and premature, with vascular dilation and pigment displacement.

Moreover, sunburns among farmers are more frequent than among the control group patients.

Arable farmers have a significant tendency to develop dry conjunctiva.

Fruit and wine-growing farmers as well as mixed crop and fruit-growing farmers are more prone to premature ageing of the conjunctiva.

Altogether, a conspicuously high number of damages of the lids, the conjunctiva and of the vitreous humour were diagnosed as well as noticeably dry eyes, especially among the arable farmers but also in the control group.

Probably due to the too young age of the test subjects, no retina or macula damages were diagnosed.

The second part of the study was a **field test**. From May to October 2006, UV radiation was measured during work. 12 female and male farmers from Lower Austria and Styria took part in this field test. Between 6:00 a.m. and 7:00 p.m. they always carried a UV-dosimeter with them during all outdoor works and every day they entered the following data into a computerized work diary: weather, posture, shading, clothing, altitude, type of work and type of farm. The analysis of the UV-dosimetry data and the work protocols showed that on some days, some of the subjects had been exposed to many times the threshold UV dose for sunburn. Manual labour or work on machines, without enclosed and sun-protected driver's cabins, provide a particular risk.

The risk depends primarily on farm logistics, not on the farm type.

Anyway, one particularly important finding of the study was the following:

There is a lack of information as well as a lack of use of personal protection against UV radiation during work on farms.

For this reason, the SVB has chosen the subject "Sun and Health" as a central topic in occupational safety consulting. The target of this campaign is to increase awareness among farmers of the negative effects of sunlight and the necessity of a better UV-prevention.

The following actions shall help to reach this target:

- **Sun protection has been made a key issue at farm counselling interviews as well as at diverse SVB activities**

A special questionnaire was elaborated for the counselling interviews in order to be able to address this issue in detail on such occasions. One point that's being particularly stressed is that no work outside must be done without UV-proof sunglasses. The requirements to be fulfilled by such sunglasses and UVA/UVB sunscreen lotions are explained in detail and samples presented.

- **More PR work using all kinds of media**

The SVB and all media addressing farmers are supplied with expert articles on sun protection. The Austrian public service broadcaster ORF brought a special feature on this topic in its "Land und Leute" program in May 2009.

- **Lectures and Seminars**

Among other things, the topic is featured in schools for agriculture and forestry. The Austrian Women Farmers' Task Force offers seminars on the topic "Sun and Health" throughout Austria.

Media material available aside from respective presentations, are leaflets and a booth system on the subject of "sun protection". When attending lectures, people also have the opportunity to check the melanin value of their skin with a special measuring device and to determine the self-protection time of their skin plus the sun protection factor that their sunscreen should provide.

This sun-protection-measuring-device has proven so successful because it allows e.g. for the lectures to be interactive and it thereby increases the learning and motivation effects.

Our "Sun and Health" campaign aims at imparting, in particular, the following information:

Of top priority is to avoid direct exposure to the sun in particular between 11 a.m. and 3 p.m. The second most important measure is sun protection by way of clothing.

A simple method to find out whether measures need to be taken to protect oneself against UV radiation is to apply the **shadow rule**. This rule says that when a person's shadow is shorter than the person is tall or if it is of equal length to the person's height, then protective measures need to be taken. A longer shadow means that there is no danger.

As far as **protective clothing** is concerned, we can learn from desert dwellers: They cover their bodies with loads of dark fabric. Dark fabrics and tightly-woven microfiber textiles provide the best protection.

In the future, UV protection clothing with a tested UPF (ultraviolet protection factor) will gain in importance. The UPF is the factor by which the self-protection time of the skin increases when wearing such clothing. Already back in 1996, the "Australian/New Zealand Standard" for the measurement of the UV screening effect of clothes was introduced. Since then, this standard has been developed further, and today, clothing is tested according to the "UV Standard 801", which includes measuring of the decrease in UV protection due to normal use, such as stretching, wear and tear, or effects of wetness. The final protection factor is the lowest value measured during the test.

Sunscreen lotions only rank third in the prevention hierarchy. Often, such lotions are applied too late or in too small an amount. Already about 30 minutes before exposing yourself to the sun, you need to put sunscreen lotion on all body parts that are not covered by clothing.

Since sunscreens are tested at applied amounts of 2 mg per square centimetre, people should apply the same amount in practice. To get a better feeling for the required amount, one could say that 4 cm long strips of sunscreen on index and middle finger are needed for each body region. Given a skin surface of arms, legs and face of an adult of approximately 1 square metre, the required amount of sunscreen lotion would be about 20 ml.

Too small an amount of sunscreen lotion used reduces the protection time!

In practice, it is in particular the following parts of the body that are often poorly protected: lips, ears, the bridge of the foot, the hairline, and skin at the edge of clothing.

A particularly important piece of information is the following: Only a densely clouded sky reduces UV radiation. Light clouds provide for hardly any UV protection, and scattered clouds might even cause a higher UV intensity than exists on clear days, because of lateral reflection!

When holding lectures, we are often asked about the consequences of tanning beds with regard to possible skin damage. In general, tanning beds should be used as rarely as possible, for UV radiation of tanning beds might be even more harmful than natural UV radiation. UVA rays penetrate deep into the skin, down into the dermis, where they let the skin age six times faster and may even cause skin cancer. By the way, a sunbed-acquired tan offers no protection against natural UV light. The same applies to self-tanning lotions.

In the winter of 2009, the questionnaires will be analysed and a documentation elaborated. We expect very interesting insights. An interim analysis of the questionnaires showed that nearly 40 per cent of the respondents admitted openly that they do not protect themselves sufficiently against the sun. Two out of three persons never or hardly ever use sunscreen lotions – even though they would be extremely important. When asked: "Why?", the most frequent answers were: "Because I don't need them.", "It's too sticky." or "Applying the lotion takes too much time." The way the questions were asked during the interviews often led to interesting discussions, which showed that there is an enormous lack of knowledge regarding sun protection.

The "Safety and Health" department regards it as its mission to attach particular importance to this topic also in the coming years.

For, the sun shines and burns, and ever more frequently causes severe and irreversible skin and eye damage.

Proper sun protection starts in your head.

UV radiation is the most harmful environmental factor for humans and animals!