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1651a ON THE UV EXPOSURE OF WORKERS. WHAT DO WE KNOW?

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Introduction We are exposed to solar ultraviolet radiation (UVR) every day, during work and leisure time. To date, there is only little knowledge about the level of irradiance. Already in 1992, UVR has been graded a group 1 carcinogen by the International Agency for Research on Cancer (IARC). In an ageing society, along with an ideal of a brown skin, non-melanoma skin cancer (NMSC) incidence rates rapidly increase.

Methods For risk assessment and deduction of protective measures, real measured data serve best. Regarding solar UVR exposure, long-term personal dosimetry measurements is required. With GENESIS-UV, we designed a suitable system. With only little impairment, each test persons measures autonomously. Data are transferred via mobile service or internet to a data server once a week automatically. GENESIS-UV has proven to be feasible in collaborations in the whole world without any changes in the system.

Results Since 2014, about 800 test persons delivered data points representing about 80000 days of measurement – in Germany. We derived the annual irradiance for more than 100 occupations, and far more occupational activities as well. Interestingly, the irradiance values for the occupations cover a very wide range (www.dguv.de/genesis). Going deeper into the occupational activities, prevention-relevant information could be obtained. The measurements have been expanded onto an European level since 2016.

Discussion Outdoor workers have to be protected from UVR exposure. During working hours, their exposure can be up to 4.5 times the leisure dose. Our approach from occupations to occupational activities enables us to suggest very distinct protective measures, and drawing a full picture of workers exposure. Particularly, we showed that already short exposure times may lead to a notable hazard. Thus, the definition of an outdoor worker has to be reviewed. The study with GENESIS-UV is by far the largest study on UV irradiance of workers worldwide.

1651b PHOTOAGING IN OUTDOOR WORKERS: MARKER OF CUMULATIVE UVR EXPOSURE, RISK FACTOR OR OCCUPATIONAL DISEASE?

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Introduction Photoaging is characterised clinically by wrinkle formation and pigmentary alterations and histologically by deposition of elastotic material in the dermal connective tissue of the dermis (solar elastosis). These undesirable changes, in addition to an increased fragility of the skin, have an important epidemiologic significance because sun damaged skin increases the incidence of non melanoma skin cancers

(NMSC). For this photoaging is a real medical problem, not just an aesthetic concern.

How to measure photoaging There is no single method available to give accurate quantification of the degenerative changes associated with photodamage. In the last few years a number of authors used different methods as a measure of photoaging (e.g. confocal microscopy, microtopography and photographic scales). At the moment there is no agreement on how to assess photoaging.

How to consider occupational photoaging The functional and anatomical damage from solar radiation being characteristic, photoaging would be considered as a chronic disease. However there is a lack of methods of determining the level of photodamage and distinguishing photoaging from chronologic ageing. Today the better knowledge of the pathophysiological mechanisms of photoaging allows the study of photo(aging) protective substances and of care for photoaged human skin. In this sense skin photodamage in outdoor workers could be considered as a risk factor.

Conclusions Even if photoaging is determined by a dose-dependent anatomical damage, considering it as an occupational disease would be not appropriate. Clinical features of photoaged skin can be useful to characterise the cumulative exposure level in working populations,¹ while in the individual cases skin photoaging represents a NMSC risk factor which must be taken into account for possible preventive and therapeutic measures.

REFERENCE

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1651c SOLAR UV EXPOSURE AND SKIN CANCER IN WORKERS

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UV radiation (UVR) is invisible to the human eye, so is also, at least according to the official statistics in most countries, the prevalence of skin cancer caused by UVR at the workplace. For that reason, skin cancer by UVR (mainly actinic keratosis, squamous cell carcinoma and basal cell carcinoma) is a mayor challenge, considering that it is the most frequent and fastest growing occupational malignancy. According to EUOSHA more than 14.5 million workers across the EU are regularly working outdoors by $\geq 75\%$ of their daily working hours. Thus, outdoor workers are in need of targeted protection against UVR, representing the group I definition for a complete carcinogen to humans according to IARC. Specific prevention measures, including workers education, early diagnosis and medical screening are crucial to minimise the risks and to reduce morbidity. Few European countries recognise occupational skin cancer by UVR as an occupational disease. Yet, even in those few countries, workers with skin cancers related to chronic, work-related solar UVR exposure are not granted legal recognition because under-reporting is tremendous. For instance, in Denmark, in the decennium after introducing of recognition in 2000, only 35 cases had been legally acknowledged as occupational. Recent German figures may provide an estimate of the disease burden. Within the first 24 months from its recognition (2015), more than 8000 cases of occupational 'cutaneous squamous cell carcinoma or multiple actinic keratoses' are notified each year, making it the most