Abstracts

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.

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


Introduction Photoaging is characterised clinically by wrinkle formation and pigmentation alterations and histologically by deposition of elastic 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, microporography 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 not be appropriate. Clinical features of photoaged skin can be useful to characterise the cumulative exposure level in working populations, 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