

KAN position paper

On the consideration of non-visual effects of lighting in standardization

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1 KAN position paper

The non-visual effects of artificial lighting are a topic with a bearing upon the safety and health of workers at work. If standardization activity in this area is planned, the German government's policy document concerning the role of standardization in the safety and health of workers at work [1] requires consideration first to be given to what extent such standardization is permissible.

1.1 Product

Standards may describe product requirements concerning components for a lighting system (e.g. lamps, luminaires and control units). They must take into account that the clause of the standard governing the user information generally requires the manufacturer to provide the necessary information on the intended and safe use of his product. Accordingly, the manufacturer's user information must describe any possible hazards that may be caused by the intentional use of non-visual effects when his products are used.

1.2 Use in company operations

In order for consideration to be given to the non-visual effects of light, the following documents are to be referred to during the planning of artificial lighting at work premises:

- ASR A3.4 technical rules concerning lighting [2], in conjunction with the recommendations by the ASTA committee for working premises on artificial biologically effective lighting in work premises [3]
- DGUV Informative document 215-220 on the non-visual effects of light upon human beings [4]

In addition, the DIN/TS 67600:2022-08 technical specification, Complementary criteria for lighting design and lighting application with regard to non-visual effects of light [5], describes cause-effect relationships.

1.3 Research

Arbeitsschutzrelevante Forschung sollte fortgeführt und, wo möglich, sollten Langzeitstudien durchgeführt werden.¹

1.4 Dialogue between the stakeholders

Dialogue between all stakeholders on the non-visual effects of light should be continued.

This KAN position paper is reviewed at regular intervals and where appropriate brought into line with the latest developments.

2 Background

Light not only has the basic function of making human vision possible; it also has non-visual effects (for example upon the human biological clock). This applies both to daylight and to light from any artificial source, regardless of whether the non-visual effects are caused unintentionally by conventional lighting, or intentionally by a form of lighting planned and used for this purpose. These non-visual effects of light are described in more detail in DGUV Informative document 215-220.

Natural light in the form of daylight is an important factor for safe and healthy workplaces. Artificial lighting is not entirely able to replicate its properties. Nevertheless, supplementary, artificial lighting solutions must be found where needed. Should lighting systems not be used appropriately, they may present a hazard to health, for example during night or shift work. Workplaces must always be illuminated such that safe and healthy work is possible.

Lighting solutions that intentionally exploit the visual, emotional and in particular non-visual effects of artificial lighting are now referred to as human-centric lighting (HCL), particularly by the lighting industry [7].

¹ Research issues necessitating consideration from the occupational safety and health perspective are listed for example in the KAN Study entitled Validated OSH-related findings concerning the non-visual effect of light upon human beings, literature review [6]. The study also contains important information on the conducting of similar studies.

3 Further literature

- [1] Policy paper on the role of standards in the health and safety of workers at work, February 2021
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