

# 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.

## Product

Standards may describe product requirements concerning components for a lighting system (e.g. lamps, luminaires and control units). 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.

## Use in company operations

The content of DIN SPEC 67600:2013-04 (technical report), Biologically effective illumination – Design guidelines<sup>1</sup>, is based in part upon inadequately validated findings. It follows that:

- Other standards or specifications should not make reference to DIN SPEC 67600 (technical report)
- The planning recommendations formulated in DIN SPEC 67600 (technical report) do not constitute a validated basis for implementation in companies of the German ASR A3.4 technical rule concerning lighting [2].

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

- 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]

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<sup>1</sup> The DIN SPEC 67600 technical report was produced by the NA 058-00-27 AA working committee, Effect of light on human beings, of the DIN Standards Committee Lighting Technology (FNL) in accordance with the technical report procedure. The technical report is currently undergoing revision (2019).

## Research

OSH-related research should be continued, and where possible long-term studies performed.<sup>2</sup>

## Dialogue between the stakeholders

Dialogue between all stakeholders 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 [6].

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<sup>2</sup> 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 [5]. 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, April 2015  
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- [2] Technische Regel für Arbeitsstätten ASR A3.4, "Beleuchtung"  
[www.baua.de/DE/Angebote/Rechtstexte-und-Technische-Regeln/Regelwerk/ASR/ASR-A3-4.html](http://www.baua.de/DE/Angebote/Rechtstexte-und-Technische-Regeln/Regelwerk/ASR/ASR-A3-4.html)
- [3] Empfehlung des Ausschusses für Arbeitsstätten (ASTA) – Künstliche biologisch wirksame Beleuchtung in Arbeitsstätten, November 2018  
[www.baua.de/DE/Aufgaben/Geschaeftsfuehrung-von-Ausschuessen/ASTA/Empfehlungen.html](http://www.baua.de/DE/Aufgaben/Geschaeftsfuehrung-von-Ausschuessen/ASTA/Empfehlungen.html)
- [4] DGUV Information 215-220, Nichtvisuelle Wirkungen von Licht auf den Menschen, September 2018  
[publikationen.dguv.de/dguv/pdf/10002/215-220.pdf](http://publikationen.dguv.de/dguv/pdf/10002/215-220.pdf)
- [5] Kantermann T., Schierz C., Harth V.: Gesicherte arbeitsschutzrelevante Erkenntnisse über die nichtvisuelle Wirkung von Licht auf den Menschen – eine Literaturstudie, Verein zur Förderung der Arbeitssicherheit in Europa e.V., August 2018  
[www.kan.de/fileadmin/Redaktion/Dokumente/KAN-Studie/en/2018\\_KAN-Literaturstudie\\_Nichtvisuelle\\_Wirkung\\_von\\_Licht.pdf](http://www.kan.de/fileadmin/Redaktion/Dokumente/KAN-Studie/en/2018_KAN-Literaturstudie_Nichtvisuelle_Wirkung_von_Licht.pdf)
- [6] ZVEI position paper: Der Einsatz von Human Centric Lighting (HCL) ermöglicht das richtige Licht für jede Tageszeit, September 2016  
[www.zvei.org/presse-medien/publikationen/der-einsatz-von-human-centric-lighting-hcl-ermoeglicht-das-richtige-licht-fuer-jede-tageszeit](http://www.zvei.org/presse-medien/publikationen/der-einsatz-von-human-centric-lighting-hcl-ermoeglicht-das-richtige-licht-fuer-jede-tageszeit)