

BASIC PRINCIPLES OF INSTRUMENTS AND METHODS IN OLFACTOMETRY AND ITS STRENGTHS AND WEAKNESSES - A REVIEW

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In the U.S., the Occupational Safety and Health Administration (OSHA) has recommended occupational exposure limits for three substances due to their objectionable odor. In Germany, a significant workplace nuisance caused by a persistent intense or nauseating odor is considered an adverse effect. Therefore, maximum workplace-concentration (MAK) values for odor-intensive substances are accompanied by a corresponding footnote stating that "odor-associated" symptoms cannot be ruled out in individual cases. The German Committee on Indoor Air Guide Values (AIR) has developed a concept of odor guideline values (OGV) to objectify complaints about odor nuisance. In this context, the availability of reliable odor detection thresholds (ODT) is a sine qua non for deriving exposure limits based on odor perception.

Comprehensive compilations of odor threshold data have been criticized as misleading because different ODT values for the same substance rarely exhibit accuracy better than ± 1000 %. Nevertheless, it has been shown that ODT can be measured very reliably, reproducibly and with low variance if important methodological aspects are considered.

To assist health and safety professionals in evaluating the reliability of ODT values, this review provides an overview about the basic principles of instruments and methods in olfactometry and discusses strengths and weaknesses.